NATIONAL INSTITUTE OF MENTAL HEALTH AND NEURO SCIENCES
Institute of National Importance
Bengaluru - 560 029

ANNUAL REPORT
2016 - 2017
An enduring vision, an indomitable spirit and an industrious multi-disciplinary team, these possibly best exemplify the character of the National Institute of Mental Health and Neuro Sciences or NIMHANS.

Spread over an area of nearly 135 acres, NIMHANS is a unique institution that combines mental health and neurosciences under one roof. Such a unique approach has made NIMHANS a premier institute not just in the country but also in the world and its three pillars include service delivery, training and research. Although intended to be a tertiary care referral centre for mental, neurological and neurosurgical disorders, the reputation of its quality care attracts people from all parts of India and from the region. There is always a balanced focus on both curative as well as promotive aspects of mental and neurological health. The therapeutic modalities blend the modern systems of medicine with traditional systems of care and management making it an undisputed leader in the area of mental health and neuro sciences.

NIMHANS is the leading post-graduate training centre in the country particularly in mental health and neurosciences. Occupying a pre- eminent position, it currently runs 53 courses (with many more in the pipeline) and the register includes superspecialty MCh and DM courses, post-doc fellowships, doctoral studies, MPhil, Master’s degree, diplomas and recently undergraduate courses in select disciplines. In addition to the courses run by NIMHANS, thousands of trainees from all over the country come to NIMHANS each year for specialized training in basic sciences as well as in the clinical disciplines.

NIMHANS, over the decades, has emerged as a leader in research in both behavioural sciences and neurosciences. At NIMHANS research occurs in a seamless manner from the bench to the bedside and from the bedside to the community. The institute has made signal contributions in a multitude of areas: from addiction to Alzheimer’s; from mental hospital history to the historical contributions of its forbears; from imaging to intensive care; from brain injury to interventional neuroradiology; from disaster relief to deep brain stimulation; from stroke research to signalling in the brain; from rabies to retroviral infections; from youth mental health to yoga research; from molecular genetics to mindfulness research; from restoration to rehabilitation ... the contributions are vast and varied.

NIMHANS plays a pivotal role in national policy and programming and as a premier institution dedicated for brain, mind and behaviour, historically has always been in the forefront of setting the agenda for mental health in India. The flagship District Mental Health Program of the Government of India emerged out of the Bellary model of care for mentally ill in a primary care set up within the decentralised District health care system. NIMHANS continues to provide the larger impetus to strategise, improvise and bring in innovation in both institutional and community based mental health care services across the country. It has contributed to the National Mental Health Policy and also promotes / supports rights-based mental health care. It actively collaborates and networks with several governmental, quasi governmental and non-governmental agencies / bodies.

From the lunatic asylum in the nineteenth century to the Mysore Government Mental Hospital in 1934, the All India Institute of Mental Health in 1954 and NIMHANS in 1974 to acquiring the status of a Deemed University in 1994 and being bestowed the status of Institute of National Importance through a separate act of Parliament in 2013, NIMHANS has grown in stature and made tremendous strides over the decades.
VISION

TO BE A WORLD LEADER IN THE AREA OF MENTAL HEALTH AND NEUROSCIENCES AND EVOLVE STATE-OF-THE-ART APPROACHES TO PATIENT CARE THROUGH TRANSLATIONAL RESEARCH
Mission

- Establish the highest standards of evidence-based care for psychiatric and neurological disorders and rehabilitation.
- Develop expertise and set standards of care for diseases of public health relevance in the developing world.
- Work with the government and provide consultancy services for policy planning and monitoring strategies in the field of Mental Health and Neurosciences and facilitate execution of national health programme.
- Human resource capacity building by training in diverse fields related to Mental Health and Neurosciences.
- Develop and strengthen inter-disciplinary, inter-institutional and international collaboration with universities and research institutes across the globe to foster scientific research, training in advanced technology and exchange of ideas in the areas of Mental Health and Neurosciences.
- Strive to enhance equitable accessibility of primary care in Mental Health and Neurological Disorders to all sections of society and ages including the vulnerable population.
- Evolve and monitor the strategies for disaster management and psycho-social rehabilitation in different cultural and ethnic groups.
- Promote Mental Health literacy and eliminate the stigma attached to the Mental and Neurological illnesses by taking the measures and the delivery system to the centres of primary health care honouring the human rights and dignity.
- Integrate allopathic and oriental medicine into health care delivery and promote evidence-based research.
- Integrate physical and metaphysical aspects of Neuroscience research to promote yoga and its application to positive mental health.
- Participate in broad field of Neuroscience and Behavioral Research applicable to human ethics, organ transplantation, stem cell research, space science, and nuclear science.
21st Convocation
# Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>From the Director's Desk</td>
<td>9</td>
</tr>
<tr>
<td>Awards, Honours and Key Assignments</td>
<td>37</td>
</tr>
<tr>
<td>Visitors to NIMHANS</td>
<td>56</td>
</tr>
<tr>
<td>Patient Care Activities</td>
<td>62</td>
</tr>
<tr>
<td>Human Resource Development</td>
<td>87</td>
</tr>
<tr>
<td>Conferences/Symposia/Workshops</td>
<td></td>
</tr>
<tr>
<td>I. Scientific Programmes Organised at NIMHANS</td>
<td>100</td>
</tr>
<tr>
<td>A. International</td>
<td>100</td>
</tr>
<tr>
<td>B. National</td>
<td>101</td>
</tr>
<tr>
<td>II. Scientific Programmes Organised Outside NIMHANS</td>
<td>112</td>
</tr>
<tr>
<td>A. International</td>
<td>112</td>
</tr>
<tr>
<td>B. National</td>
<td>113</td>
</tr>
<tr>
<td>III. Specific Training Underwent by Faculty/Staff</td>
<td>119</td>
</tr>
<tr>
<td>Central Facilities</td>
<td>123</td>
</tr>
<tr>
<td>Research Activities</td>
<td></td>
</tr>
<tr>
<td><strong>Basic Sciences</strong></td>
<td></td>
</tr>
<tr>
<td>Biophysics</td>
<td>135</td>
</tr>
<tr>
<td>Biostatistics</td>
<td>143</td>
</tr>
<tr>
<td>Human Genetics</td>
<td>144</td>
</tr>
<tr>
<td>Neurochemistry</td>
<td>148</td>
</tr>
<tr>
<td>Neuromicrobiology</td>
<td>154</td>
</tr>
<tr>
<td>Neurophysiology</td>
<td>157</td>
</tr>
<tr>
<td>Neurovirology</td>
<td>173</td>
</tr>
<tr>
<td>Psychopharmacology</td>
<td>176</td>
</tr>
<tr>
<td><strong>Behavioural Sciences</strong></td>
<td></td>
</tr>
<tr>
<td>Child &amp; Adolescent Psychiatry</td>
<td>177</td>
</tr>
<tr>
<td>Clinical Psychology</td>
<td>180</td>
</tr>
</tbody>
</table>
Neurological Rehabilitation ..........................................................197
Nursing ......................................................................................198
College of Nursing ....................................................................201
Psychiatry ..................................................................................202
Psychiatry Rehabilitation .........................................................214
Psychiatric Social Work .............................................................215

**Neurosciences**
Clinical Neurosciences ..............................................................221
Epidemiology .............................................................................224
Neuroanaesthesia and Neurocritical care .................................226
Neuro Imaging and Interventional Radiology .........................230
Neurology ..................................................................................232
Neuropathology ........................................................................238
Neurosurgery ............................................................................246
Speech Pathology & Audiology ................................................251
Transfusion Medicine & Heamatology .......................................251
Ayurveda....................................................................................252

**Publications**
International Journals ...............................................................257
National Journals ......................................................................279
Book Chapters/Conference Proceedings ..................................289
Monographs/Manuals/Reports ..................................................291
Newsletters/Souvenirs .............................................................292
Articles for General Public/IEC Materials ...............................293
Books Published ........................................................................295

**Contributions to Scientific Deliberations**
International Conferences ......................................................296
National Conferences ...............................................................316
Resource Persons .....................................................................345
Media/Phone-in Programmes ..................................................349

**Public Lectures** .....................................................................351

**Statutory Bodies** ....................................................................357

**Faculty and Staff** ..................................................................369

**Finance and Accounts** ..........................................................379

**Homage** ..............................................................................407
I am pleased to present the Annual Report of National Institute of Mental Health & Neuro Sciences (NIMHANS), Bengaluru for the period 2016-17. The report documents a year’s accomplishments and forward progress towards our vision and mission. NIMHANS continued to push boundaries to provide dedicated care to patients, extend path-breaking research and training programmes, and expand the frontiers of mental health and neurosciences.

With a resolute commitment to our patients and community, we are transforming the care we provide today and preparing for the future. Various new initiatives have been unveiled to advance knowledge in particular fields – increasingly in collaborative efforts. The increased focus on translational research also gives greater impetus to our academic programmes and endeavours. The pursuit of excellence lies at the heart of everything we do. No matter what we achieve, we are always striving to do more and we will work hard to continue to inspire hope and improve the lives of our patients.

I sincerely acknowledge the contributions made by the faculty and staff to the Institute and the community in many ways. I am also grateful to the members of our statutory bodies, donors, and other partners for their invaluable guidance and unstinting support.

Prof. B. N. Gangadhar
Director
1. PATIENT CARE SERVICES

NIMHANS remains committed to delivering the highest quality clinical care with an unwavering attention to the needs of the patients. Comprehensive clinical services are provided using evidence-based intervention and multidisciplinary team approach to achieve excellence in patient care. These services are provided through various outpatient specialty clinics, inpatient facilities, and community-based programmes.

Patient care services primarily reach out to the less privileged sections of the society. During the year 2016-17, about 5.3 lakh patients from various parts of the country and across the globe received specialised medical care for psychiatric and neurological problems. About 75 per cent of the patients received the treatment at no cost or at highly subsidized cost.

<table>
<thead>
<tr>
<th>Particulars</th>
<th>2015-16</th>
<th>2016-17</th>
</tr>
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<tbody>
<tr>
<td>Screening</td>
<td>117478</td>
<td>116984</td>
</tr>
<tr>
<td>Registrations</td>
<td>58219</td>
<td>57951</td>
</tr>
<tr>
<td>Follow-ups</td>
<td>255479</td>
<td>277475</td>
</tr>
<tr>
<td>Admissions</td>
<td>16325</td>
<td>16457</td>
</tr>
<tr>
<td>Emergency Care</td>
<td>49742</td>
<td>44732</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>497243</td>
<td>513599</td>
</tr>
</tbody>
</table>

Extension services were offered to 14109 patients at Gunjur, Gowribidanur, Maddur, Kanakapura, Madhugiri, Sakalawara, and Turuvekere taluks, during the review period. Extension services in most of the taluks are now being run under the Manochaitanya programme launched by the Government of Karnataka which aims at integrating mental health into primary care.

The Department of Psychiatry runs various specialty clinics and services including Centre for Addiction Medicine (CAM), Family Psychiatry Centre, Geriatric Clinic & Services, Obsessive Compulsive Disorder (OCD) Clinic, Electro ConvulsiveTherapy (ECT) Services, Transcranial Magnetic Stimulation Laboratory, Transcranial Direct Current Stimulation (tDCS), Schizophrenia Clinic & Metabolic Clinic, Genetic Counselling and Testing (GCAT) Clinic, Emergency Psychiatry and Acute Care (EPAC), Community Psychiatry Services, Perinatal Psychiatry Services, Molecular Genetics Laboratory, Consultation Liaison Services, Telemedicine Services, and Free Legal Aid Services to ensure comprehensive care.

The Department of Neurology in association with other departments of the institute also extends specialty services through Neuromuscular, Epilepsy, Movement Disorder, Dementia and Geriatric Clinics.

To enhance the quality of care being provided at the OPD, a systematic re-structuring of the OPD services has been taken up under the expert guidance of the Department of Management Sciences, Indian Institute of Science (IISc), Bengaluru and International Institute of Information Technology, Bengaluru. As part of the Digital NIMHANS 2.0 initiative, e-prescription and e-payment facilities have been started. E-tracking and reminder systems for effective follow-up are also being planned.

2. HUMAN RESOURCES DEVELOPMENT

2.1 Academic programmes

NIMHANS has always been on the leading edge of developing advanced programmes and adopting new technologies that help augment scientific research, enhance medical education, and create a better healthcare experience.

NIMHANS has always been on the leading edge of developing advanced programmes and adopting new technologies that help augment scientific research, enhance medical education, and create a better healthcare experience.

During the review period, 27 professionals completed Post-Doctoral Fellowship (in Child Mental Health, Child & Adolescent Psychiatry, Acute Care and Emergency Psychiatry, Geriatric Psychiatry, Obsessive Compulsive Disorder, Neurological Rehabilitation, Transfusion Medicine, Clinical Neurosciences & Therapeutics in Schizophrenia, Epilepsy, Movement Disorders, Neuromuscular Disorders, Addiction Medicine, Neuropathology, and Neuroanaesthesia and Neurocritical Care) and 35 completed PhD (in Biophysics, Neurochemistry, Neuropathology, Neurology, Neurophysiology, Neurovirology, Neurosurgery, Nursing, Psychiatric Social Work, Psychiatry, and Clinical Psychology). A total of 213 candidates were declared qualified to receive degrees in various specialties: DM (Neurology), DM Neuroimaging & Interventional Radiology, DM (Child & Adolescent Psychiatry), DM (Neuroanaesthesia), MD (Psychiatry), M.Ch (Neurosurgery),
Diploma (Psychiatry), MPhil, MSc, BSc Degrees, Post-Basic Diploma and Diploma in Nursing.

A total of 4864 students from various other institutes - from India and abroad - visited NIMHANS and underwent training during the year.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Course</th>
<th>Total No. of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Postgraduate degree/diploma and undergraduate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Joined the Institute during the year 2016-17</td>
<td>230</td>
</tr>
<tr>
<td></td>
<td>b) Completed and declared qualified during the year 2016-17</td>
<td>213</td>
</tr>
<tr>
<td>2</td>
<td>PhD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Joined the Institute during the year 2016-17</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>b) Completed and declared qualified during the year 2016-17</td>
<td>35</td>
</tr>
<tr>
<td>3</td>
<td>Post-Doctoral Fellows</td>
<td>27</td>
</tr>
<tr>
<td>4</td>
<td>Short-term training (from outside institutions)</td>
<td>4956</td>
</tr>
</tbody>
</table>

2.2 Capacity building and strengthening human resource development

Facilitating capacity building and strengthening human resource development in different health care delivery systems form the prime mandates of NIMHANS. The institute is actively involved in imparting advanced technical knowledge to medical, para-medical and nursing professionals to promote skills and evolve employable manpower to meet the needs of the nation. Training is also extended to caregivers, police personnel, media persons, administrative medical officers among others. In addition to the short-term training programmes, faculty, staff and students of NIMHANS routinely conduct and participate in various seminars, workshops, conferences and other academic endeavours both within and outside the Institute.

During the year 2016-17, NIMHANS hosted several international and national scientific deliberations. The faculty of the Institute organized 327 educational/ resourceful events (workshops/symposia/conferences: 258 at NIMHANS and 69 outside the Institute). A total of 31 faculty and staff members underwent specific training to expand their knowledge and skills.

The third TS Srinivasan NIMHANS Knowledge Conclave 2016 was organised by NIMHANS and NEUROKRISH, Neurosciences India Group in association with in association with ASIAN EPILEPSY ACADEMY (ASEPA) on 23 February 2017. Prof. Timothy A. Pedley, Professor of Neurology, Neurological Institute of New York, Columbia University, USA delivered keynote lecture on “Treatment of epilepsy 2017–Exciting challenges and new opportunity”. Prof. Samuel F. Berkovic, 37th T.S.Srinivasan Endowment Orator and Laureate Professor, Department of Medicine, University of Melbourne, Australia was the guest of honour. The conclave featured international and Indian faculty of eminence in the field of Neurosciences.

Dr. Ramachandra N Moorthy Foundation for Mental Health and Neurological Sciences at NIMHANS funded 33 events to promote training and academic activities in the field of mental health.


Details of the other scientific deliberations and conferences organised by the Institute are provided separately in the respective section.

3. RESEARCH

NIMHANS is synonymous with cutting-edge research that is both interdisciplinary and translational, facilitating practical applications for human and societal benefit. Research activities at the Institute take place in a wide range of departments, programmes, and centres, through active collaborations with various prominent regional, national and international agencies. The thrust areas of research continue to be: a) unraveling the molecular and sub-cellular mechanisms for disease process, b) linking clinical status with structural, biochemical, immunological and serological abnormalities searching for biomarkers, c) exploring genetic basis for disease causation, d) developing prognostic and clinical predictors and diagnostic inventory/checklists.
During the period 2016-17, a total of 842 scientific articles/communications were published (457 articles in International Journals, 224 in National Journals, and 161 other publications including monographs, manuals, chapters in books, articles in newspapers, etc.).

The Centre for Brain Mapping (CBM), Clinical and Research facility for EEG studies in Psychiatry was inaugurated on 1st June 2016 by Shri. Anshu Prakash, Joint Secretary, Ministry of Health and Family Welfare, Government of India.

The Centre houses two EEG systems a 32-channel EEG system for clinical EEG services and a 128 channel EEG system for polysomnography and EEG/ERP research. The centre also has a source analysis package featuring Geodesic Photogrammetry System 2.0 and GeoSource 2.0, a complete system to digitize 3D position of EEG electrodes. The centre offers clinical EEG services for the Department of Psychiatry and also supports research activities of the DBT-funded ADBS (Accelerator programme for Discovery of Brain disorders using Stem cells) as well as PhD research projects.

4. NEW INITIATIVES / FACILITIES

4.1 Enhanced Patient Care Services

1. The Department of Transfusion Medicine & Haematology has added new tests/procedures including Apheresis (single donor platelet) and Coagulation Profile (PT, APTT, INR, Protein C & Protein S and Anti-Thrombin 3 estimation). NAT testing has also been adopted on all blood donations and Haemovigilance Programme of India (HvPI) is being effectively implemented.

2. Molecular genetic diagnosis for rare familial conditions like VHL disease and PCR-based diagnosis for Fragile X syndrome has been initiated by the Department of Human Genetics.

3. The Department of Neuroanaesthesiology has expanded its intensive care facilities with the procurement of AIRVO 2 system featuring a humidifier with integrated flow source that delivers high humidified flows of air/oxygen mixtures to spontaneously breathing patients, through nasal interface and latest airway management gadgets (Ambuscope, King Vision Video Laryngoscope Kit, CMAC Difficult Intubation Video Laryngoscope and Bronchoscope) that serve important purpose of safely securing the patient’s airway both during elective and difficult airway scenarios. Anesthesia e-charting, data capture and storage system which improves accessibility to patient data, and permits anesthesiologists to focus on core patient management during perioperative period, has also been installed.
4. To improve the services, in addition to existing equipment and diagnostic facilities, the Department of Neuro Imaging and Interventional Radiology (NIIR) has commissioned MR-PET imaging system and is being effectively utilized. Molecular imaging in simultaneous association with structural imaging is being increasingly used for the diagnosis of various neurological conditions in their early stages.

5. The Department of Neuromicrobiology has come up with various new facilities encompassing rapid diagnosis of M. tuberculosis infection by immunological and molecular methods; diagnosis of CNS infections like Toxoplasma, Cryptococci and Brucella; antifungal testing for Cryptococci; proteomic studies to understand the biomarkers in diseases; anti-Nuclear antibody testing by Immuno-Fluorescence; molecular profiling of MRSA; and anti-MUSK antibodies for diagnosis of Myasthenia.

6. Sample tracking software for Neuropathology Lab is being developed in collaboration with International Institute of Information Technology-Bangalore (IIIT-B). This mobile-based android software package, completely customised to the lab requirements of the Department of Neuropathology, would help in the process of tracking pathological samples real-time. Open source software has been used in the design and implementation.

7. Self-Sustaining Diagnostic Facility for providing advanced diagnostic tests in autoimmune and neuromuscular disorders and CNS tumors from the Neuromuscular Laboratory & Neuro-oncology Laboratory in Neurobiology Research Centre has been running successfully with support from the administration benefitting several patients. New tests have been introduced expanding the scope of tests for autoimmune and muscle disorders.

8. The state-of-the-art Microsurgical Skills Lab has been set up with dedicated operating microscopes and neuro-endoscopic stations. The laboratory provides the opportunity for trainees and young neurosurgeons to learn neurosurgical anatomy, practice to operate under the microscope, perform bone drilling on various animal cadaveric bones, perform microvascular and nerve anastomosis and get exposed to newer equipment(s) like endoscopes.

9. Neurology Outpatient Services have been expanded through placement of faculty from the Department of Neurology in the OPD Screening Block, enabling the patients to receive neurology consultation the same day of their visit.

10. Swavlamban Health Insurance Scheme for persons with disability including mental illness was launched by Ministry of Social Justice and Empowerment, Government of India. Psychiatric Rehabilitation Services unit is working with new India Assurance Company Limited, to extend policies to the patients of NIMHANS under the scheme. Development of referral system via e-hospital for patients with severe mental disorders (SMDs) under SERWICE (Services for Enhanced Recovery with Intensive and Continued Engagement) has been initiated.

11. The upgraded Telemedicine Centre with state-of-the-art facilities for tele-consultation and for training doctors was opened by the Department of Psychiatry. Enhanced security measures for psychiatry patients were initiated in the hospital with identification wrist bands, biometric facilitated entry for staff and more intense safety precautions. Aadhar cards were provided for long stay patient. Gynaecological and dental check-ups and related treatment were also extended to them.

12. A web-based platform was developed by the Department of Clinical Psychology to launch internet-based mental health service programmes, primarily in the form of self-care modules for mild and subclinical levels of common mental health problems (https://www.echargementalhealth.nimhans.ac.in/). Currently, an interactive and professionally assisted, self-care program for Depression, namely PUSH-D (Practice and Use Self-Help for Depression) has been uploaded on this website. Also, work is in progress to upload another service, called “Wellness Check” for individuals in the community to monitor their status of wellbeing and receive feedback on the same, with the purpose of increasing engagement in self-care for mental health and breaking barriers to professional help seeking by distressed individuals, thereby reducing treatment gap. In addition, an android app version of PUSH-D has been made available on Google Play Store.
New screening block and modernised canteen facility for the public have been opened as part of the restructuring of the OPD and related services.

4.2 Outreach / Public Education and Extension Activities / Awareness Programmes

Centre for Public Health: Training programme for Asha workers was held during November-December 2016 at different taluks in Kolar District. About 320 Asha workers actively took part in the programme. Mental Health Awareness Programme was also organised on 31 March 2017 at Kolar district.

The Yuva Spandana programme has been expanded with the establishment of Yuva Spandana Kendras (YSKs) across all the 30 districts of the state for facilitating psycho-social consultancy and support to the youth. During the review period, 4569 sensitisation programmes were conducted, reaching out to 8,19,442 youths.

NIMHANS Centre for Well-Being (NCWB): The urban community centre, which aims at working on preventive and promotive aspects of mental health centre, conducted about 60 interactive workshops and health education programmes for various groups – students, parents, teachers, elderly, general public, mental health professionals and medical professionals, during 2016-17. The centre has trained more than 2300 people in the community on different aspects of mental health, which includes both in-house and outreach services in the last one year. Various outreach programmes on mental health education were organised for Anganwadi children, adolescent girls and teachers of a few government schools, and young mothers in Primary Health Centre.

The centre brought out an IEC leaflet on marital enrichment therapy and two issues of ‘The Loudspeaker – Amplifying the Voice of Mental Health’, a mental health magazine for general public were published with support from Dr. Ramachandra N Moorthy Foundation for Mental Health & Neurological Sciences.

NCWB has started public lectures series from July 2016 to promote mental health and increase awareness. Thought provoking talks by prominent mental health professionals from NIMHANS focus on de-mystifying mental health issues and creating a bridge between experts and the community. Six public lectures have been conducted till date as part of this new initiative.

‘Wellbeing Volunteers Programme’ has also been initiated for community volunteers to help them equip their skills in the process of identification of mental health problems in community and facilitation of home visit/telephone services, basic counselling, stress management, suicide prevention strategies and psychosocial competencies of children which cover the preventive, curative and promotion components of mental health issues.

Neuropathology Brain Museum: The Neuropathology Brain Museum (Human Brain Museum), which houses normal and pathological brains, serves as a core resource for students and visitors interested in neurosciences. It exists to support medical/allied-health trainees and professionals in their study of human brain anatomy and pathology. During 2016-2017, a total of 1913 students from various schools and colleges visited the Brain Museum. In addition, many foreign scientists and dignitaries, who came to NIMHANS for scientific collaboration, visited the Brain Museum and greatly appreciated the unique collection and the means of display. The Brain Museum was also widely reported in print and electronic media. The total number of visitors to the Neuropathology Brain Museum during 2016-2017 stood at 4327.

NIMHANS Integrated Centre for Yoga (NICY): The centre facilitates services, training and research activities related to yoga in mental health and neurosciences. NICY has a
multidisciplinary working group of faculty members, from various departments, interested in yoga and allied activities.

During 2016-17, a total of 13699 patients utilized yoga services offered by the NICY. Separate sessions were held for patients with different neuro-psychiatric disorders and caregivers by expert yoga therapists using validated yoga modules. Additional services and facilities were developed during the period under review. Some of the major developments include: (a) patient assessment/ intake services at 2 pm on all working days (b) development and validation of yoga module for Obsessive Compulsive Disorder (OCD) (c) One-on-one therapy sessions for specific category of patients/ research subjects (d) Weekly yoga session for staff/ students.

Four editions of the quarterly newsletter, Samatvam, were brought out by NICY during 2016-17. A special issue of Samatvam covering the activities of 2nd International Day of Yoga (IDY)- 2016 at NIMHANS was released in June 2016. Mass yoga sessions were conducted for staff and students on the 21st of every month. To mark the celebrations of 2nd International Day of Yoga, week-long yoga activities were conducted at NICY. Serving Yogic Sattvik diet for staff and students at NIMHANS canteens, organising yoga competitions for staff/ students/ patients and caregivers, quiz contests for staff and students of NIMHANS were some of the highlights of the celebrations. A mass yoga session was also conducted on 21st June 2016 in which nearly 900 staff and students actively took part. A number of distinguished guests from various parts of India and abroad visited the centre during the review period.

4.3 Academic & Capacity Building

1. Approval to start MSc (Biostatistics) course has been granted and the first batch (2017-2018) would be enrolled from the next academic year.

2. Post Graduate Certificate course of one year duration in Clinical Biochemistry with Institute Fellowship to eligible post-graduates in Biochemistry has been introduced.

3. An independent Geriatric Psychiatry unit with full time faculty has been formed. New training courses such as DM in Geriatric Psychiatry and Fellowship in Geriatric Mental Health Care have been approved.

4. For the first time in the country, Postdoctoral fellowships in Women's Health, Forensic Psychiatry and Brain Stimulation have been started by the Department of Psychiatry.

5. Six extra MD seats reserved for students from Uttarakhand, Chhattisgarh and North Eastern states, where there is a dearth of psychiatrists, have been created. The training program for MD students was improvised with newer pedagogical methods and training being adapted for different levels.

6. The Virtual Knowledge Network (VKN), the online capacity building facility, expanded its scope to train physician and other health professionals from Bihar and Chhattisgarh under mental health programme. This hybrid learning is integrated with the digital mobile based module and accreditation.

7. The Department of Mental Health Education started one month certification programme in Mental Health Education, three students enrolled for the same and completed it successfully. Fellowship programme in Mental Health Education (for four students) would also be started the coming academic year. The Academic Committee and Board of Studies have approved the proposal to start the fellowship from the next academic year. E-journal titled Journal of Mental Health Education (ISSN: 2456-5733) has also been started by the department.

4.4 Building & Infrastructure

1. Adolescent Psychiatry Centre (APC), an exclusive 22-bedded in-patient facility with state-of-the-art equipages for adolescents was opened in June 2016.

The newly established Adolescent Psychiatry Centre
2. Three yoga halls, two assessment rooms, and laboratory space for psycho physiological investigations was constructed at the NIMHANS Integrated Centre for Yoga (NICY).

3. The construction of NIMHANS Sub-speciality Block to be named after Prof. RM Varma, Founder-Director of NIMHANS in the Neuro Centre is in brisk progress and on the verge of completion. The seven-floor centre, with a built-up area of 9600 sq. meters, will have 125 beds, 25 ICU beds, two operation theatres and state-of-the-art laboratory facilities.

4. Decks have been cleared for the construction of North Campus of NIMHANS with the High Court ruling in favour of the Institute in a land dispute. The fencing and building of compound wall would be completed soon, to ensure that the entire land is completely secured. The Government of Karnataka had provided this land to the Institute to establish poly-trauma centre and associated patient care services.

5. RECOGNITION FOR NIMHANS CONTRIBUTIONS

5.1 Awards

NIMHANS-Psychiatric Rehabilitation Services won National Award for the Empowerment of Persons with Disabilities 2016 under the category of ‘Best Institution—An Organisation Providing Holistic and Comprehensive Services to the Persons with Disabilities in a Comprehensive Manner’. The award was received by the Prof. SK Chaturvedi, Head of Psychiatric Rehabilitation Services from the Hon’ble President of India Shri. Pranab Mukherjee at a function held in New Delhi on 3 December 2016.

NIMHANS bagged the Vayoshreshtha Samman-2016 National Award under the category “Best Institution for Research in the Field of Ageing” in recognition of theseservice towards the cause of elderly persons, especially indigent senior citizens at a function organized by the Ministry of Social Justice & Empowerment, Government of India, New Delhi on 1 October 2016. Hon’ble President of India Shri. Pranab Mukherjee presented the prestigious award to the representatives of NIMHANS.

Hon’ble President of India Shri. Pranab Mukherjee presenting the Vayoshreshtha Samman-2016 Award to the representatives of NIMHANS

Dr. Umamaheswara Rao GS, Sr. Professor, Department of Neuroanaesthesia (i) received the prestigious Dr. BC Roy Award- Eminent Medical Teacher 2016 by the Hon’ble President Shri. Pranab Mukherjee, Rashtrapati Bhavan, New Delhi, 28 March 2017.

Dr. Umamaheswara Rao GS, Sr. Professor, was honoured with the prestigious Dr. BC Roy Award- Eminent Medical Teacher 2016 by the Hon’ble President Shri. Pranab Mukherjee, at the Rashtrapati Bhavan, New Delhi

Dr. Satishchandra P, Sr. Professor, Department of Neurology and former Director/Vice-Chancellor, NIMHANS, received (i) the coveted Sir M. Visvesvaraya Lifetime Achievement Award for Senior Scientists by the Govt. of Karnataka for lifetime contributions to the development of science and technology for the year 2016 (ii) Ambassador for Epilepsy Award (India region) in recognition of outstanding contribution to the field of
epilepsy by International League Against Epilepsy (ILAE) and International Bureau for Epilepsy (IBE) for the year 2016-2017.

Dr. K Sekar, Registrar and Professor, Department of Psychiatric Social Work, received (i) WAPR-IC 2016 Award for Excellence in Psychosocial Rehabilitation (ii) Golden Jubilee Year Prof. Rajeshwar Prasad Memorial Award for Professional Social Work/Social Work Action and Social Administration Policy, ISSA, Banaras Hindu University, Varanasi, February 2017.

Dr. Shoba Srinath, Sr. Professor, Department of Child and Adolescent Psychiatry, received 'Lifetime Contribution Award' by Information and Resource Centre (IRC) for contributions to the field of medicine, at Kalaangana cultural fest, Bengaluru, 12 November 2016.

Dr. Raju TR, Sr. Professor, Department of Neurophysiology, honoured for his outstanding contributions to the field of neuroscience, 34th Annual Meeting of Indian Academy of Neurosciences, NBRC, Manesar, 19-21 October 2016

Dr. Ravi V, Professor, received ‘IAMM Dr. H I Jhala Award for an Eminent Microbiologist’ for the year 2015-16.

The Department of Neurology, NIMHANS received the coveted ICICI Lombard & CNBC-TV18 India Healthcare Award 2015-16 under the “Best Single Specialty Hospital Neurology” for the third time in recognition of the meritorious performance.

Virtual Knowledge Network (VKN) NIMHANS ECHO team was chosen to deliver a presentation on ‘Development and implementation of telementoring network for skilled capacity building and quality care in addiction and mental health: Virtual NIMHANS’ at the National Summit on Good and Replicable Practices and Innovations in Public Healthcare Systems, Tirupati, Andhra Pradesh, organised by National Health Mission, Ministry of Health and Family Welfare, Government of India, 29-31 August 2016.

Winners of Express Public Health Awards 2017 at the presentation ceremony held concurrently with Healthcare Sabha 2017 at Visakhapatnam

NIMHANS bagged Express Public Health Award under the ‘Most Efficiently Run Health Programme by a Government Institution’ category (for hub-and-spoke model across the country comprising community health professionals, NGOs, GPs, non-specialists and lay counsellors). The Express Public Health Awards, in its second edition, honoured state governments, public sector institutes, government hospitals and NGOs for their exemplary efforts to achieve UN's Sustainable Development Goals (SDG) related to health.

Transfusion Medicine Centre, NIMHANS was awarded a Certificate of Appreciation for outstanding efforts in organizing and conducting highest number of voluntary blood donation camps for the year 2015-16 on National Voluntary Blood Donation Day, 1 October 2016, by the Karnataka State AIDS Prevention Society and Karnataka State Blood Transfusion Council.

NIMHANS Blood Bank (Transfusion Medicine Centre) received a certificate of participation in the record event. The Rotary International District 3190 made it to the Guinness World Records with most people signing up to donate blood within eight hours at multiple venues. The Indian Red Cross Society (Karnataka state branch) and the Rotary TTK Blood Bank were the medical partners for the event held at Bengaluru on 4 August 2016.

Clinical Pathology Laboratory, Department of Transfusion Medicine & Hematology was awarded NABL accreditation in December 2016 (valid from 22 September 2016 to 21 September 2018).

The Metabolic Laboratory, Department of Neurochemistry, received 100% satisfactory results in the proficiency testing for Screening of Inborn Errors of Metabolism by Tandem Mass Spectrometry (TMS) conducted by Centers for Disease Control and Prevention (CDC), Atlanta, USA, for the year 2016. Clinical Biochemistry Unit was listed in the “Best...
Laboratory” category in the External Quality Assurance (EQAS) Program, conducted by Bio–Rad Laboratories.

Dr. Shivashankar N, Professor, Department of Speech Pathology & Audiology, honoured for the services rendered for prevention and control of deafness by the NPPCD, Karnataka State Unit, International Ear Care Day, 3 March 2017.

Dr. Sundar Periyavan, Professor and Head, Department of Transfusion Medicine & Haematology, awarded membership, National Academy of Medical Sciences (India), in recognition of significant contribution for the advancement of Medical Sciences.

Dr. Bindu M Kutty, Professor and Head, Department of Neurophysiology, honored with ‘Academic Excellence Award’ by American Association of Physicians of Indian Origin - Sleep (AAPIOS), Annual Dinner Meeting of AAPIOS, Denver, Colorado, 12 June 2016

Dr. Shankaranarayana Rao BS, Professor, Department of Neurophysiology, received Prof. S.B. Deshpande Award in Neurophysiology by the Association of Physiologists of India for the outstanding contributions and excellence in the field of Neurophysiology, 15 September 2016.

Dr. Ravi Yadav, Additional Professor, Department of Neurology, received MDSI Best Paper award, ‘Genetic analysis of the glucocerebrosidase gene in south Indian patients with Parkinson’s disease’, 2nd Annual Conference of the Movement Disorders Society of India (MDSICON 2017), NIMHANS Bengaluru, 6-8 January 2017.

Dr. Nalini A, Professor, Department of Neurology, awarded Fellow of Indian Academy of Neurology, 2016.

Dr. Suvarna Alladi, Professor, received Gandhi International Scholar Award by House of Lords London, UK, 4 July 2016.

Dr. Jagadisha Thirthalli, Professor, Department of Psychiatry, received the Vimla Virmani Award of the National Academy of Medical Sciences (NAMS), Raipur, Chhattisgarh, 22 October 2016.

Dr. Ahalya Raguram, Professor, and Dr. Paulomi M Sudhir, Additional Professor, Department of Clinical Psychology, received Best Paper award, ‘Role of Motivation in the outcome of psychotherapy’, International Conference on Contemporary Trends in Clinical Psychology: Training, Research and Practice, NIMHANS, Bengaluru, 17-19 November 2016.

Dr. Sriganesh K, Additional Professor, Department of Neuroanaesthesia, received Best Research in Pain Award 2015-16, for the study titled ‘Reporting quality of abstracts of randomized controlled trials in major pain journals before and after publication of CONSORT extension for abstracts: A systematic survey’, 2nd International Conference on Recent Advances in Pain, Kolkata, 25-28 August 2016 (ii) Member, Executive Committee, Karnataka Chapter of ISSP.
Dr. Maya Bhat, Associate Professor, Department of Neuro Imaging and Interventional Radiology, received Best Poster award, ‘Novel imaging observation in five cases of Autosomal Recessive Spastic Ataxia of Charlevoix Saguenay (ARSACS)’, 14th Annual Conference of Indian Society of Pediatric Radiology, Kolkata, 10-11 September 2016.

Dr. Senthil Amudhan, Assistant Professor, Department of Epidemiology, received (a) the prestigious BMJ Awards South Asia, for the year 2015, under Healthcare Innovation category, for development of mental health care delivery model and manual for Accredited Social Health Activists (ASHAs) in India, New Delhi, 19 November 2016 (b) along with MPH students (Dr. Bhujabali, Dr. Harish Babu, Dr. Shilpa, Dr. Charini) received the ‘Best Public Health Video Presentation’, for the video titled ‘Depression: Let’s talk about it’, 28th Annual State Conference of Karnataka Association of Community Health, 9-10 December 2016.

Dr. Veena A Satyanarayana, Assistant Professor, Department of Clinical Psychology, received Best Poster Award, ‘Experiences of pregnant women’s exposure to Second Hand Smoke (SHS), Home – A Qualitative Study from India and Bangladesh’, International Conference of Marce Society on Perinatal Mental Health, Melbourne, Australia, 23-25 September 2016.

Dr. Manjunatha N, Assistant Professor, Department of Psychiatry, received Best Oral Paper award, ‘Socio-demographic profile and baseline clinical parameters of patients admitted at Sakalawara Residential Services’, Indian Psychiatric Society – Karnataka Chapter (KANCIPS), Mysuru, 25 September 2016.

Dr. Kanmani TR, Assistant Professor, Department of Psychiatric Social Work, received Best Paper Award, ‘Psychological distress and concerns of caregivers in emergency and trauma care center in Bengaluru’, 35th National Conference of Indian Society of Professional Social Work, Chandigarh, 9-11 February 2017.

Dr. Anish Cherian, Assistant Professor, Department of Psychiatric Social Work, awarded Public Health Research Initiative (PHRI) Fellowship, Public Health Foundation of India (PHFI) in collaboration with Science and Engineering Research Board (SERB).

Dr. Seena Vengalil, Assistant Professor (on contract), Department of Neurology, received the Best Paper award, 13th International Congress of Neuromuscular Disorders, Toronto, 5-9 July 2016.

A number of students and research associates of the Institute have also received awards and recognitions for their contributions to areas of research in mental health and neurosciences at various conferences and other academic events—details of which are provided in the Awards, Honours and Key Assignments section of the Annual Report.

5.2 Oration by NIMHANS Faculty

Dr. Shoba Srinath, Sr. Professor, Department of Child and Adolescent Psychiatry, delivered Dr. Girindra Sekhar Bose Oration, Indian Association of Private Psychiatry (West Bengal State), Kolkata, 30 January 2017.

Dr. Umamaheswara Rao GS, Sr. Professor, Department of Neuroanaesthesia, delivered JNMC Oration, 32nd ISACON South & 32nd ISA Karnataka State Conference 2016, Belagavi, 19-21 August 2016.

Dr. Vani Santosh, Professor and Head, delivered Department of Neuropathology delivered (a) Tamil Nadu-Puducherry Oration, 65th Annual Conference of Pathologists and Microbiologists, Jaipur, December 2016 (b) Presidential Oration, 7th Annual Conference of Karnataka Neurosciences Academy, Bagalkot, January 2017.

Dr. Shivashankar N, Professor, Department of Speech Pathology & Audiology, awarded S. P. Acharya Annual Endowment Lecture, ‘Insights into Communication Skills in Child
Language Disorders with Specific Reference to LD/APD’, Spastics Society of Karnataka, Bengaluru, 18 March 2017.

Dr. Jamuna Rajeswaran, Professor, Department of Clinical Psychology, was honoured with Psycho Oration Award, 43rd National Annual Conference of the Indian Association of Clinical Psychologists (NACIACP), Kovai Vidyashram, Coimbatore, 27–29 January 2017.

Dr. Shivarama Varambally, Additional Professor, Department of Psychiatry, Distinguished Speaker, oration on ‘Yoga for Psychosis: Calming the fire within’, Indo-Canadian Psychiatric Association (ICPA) Meeting, Toronto, Canada, 23 September 2016.

6. ACTIVITIES AND EVENTS AT NIMHANS

Dr. B.R. Ambedkar Jayanti

The 125th birth anniversary of ‘Bharat Ratna’ Dr. B.R. Ambedkar was celebrated on 18 April 2016 at NIMHANS.

Shri Siddaiah, former commissioner, Bruhat Bengaluru Mahanagara Palike (BBMP) was the Chief Guest. Ven. Vinayarakkhita Thero, Spoorthidhama, Anjanapura, Bengaluru was the Guest of Honour.

In his special address, Shri Siddaiah spoke about the life, struggle and contribution of Dr. Ambedkar, the principal architect of India’s Constitution. Folk artistes from Drama & Arts Division of Kendriya Sadan, Bengaluru presented a cultural programme on the occasion.

International Nurses Day 2016

The International Nurses Day was celebrated on 11 May 2016 under the theme “Nurses: A Force for Change: Improving Health Systems’ Resilience”.

Dr. Sharanprakash R Patil, Hon’ble Minister of State for Medical Education, Government of Karnataka and Vice-President, NIMHANS, Bengaluru was the Chief Guest

Awards for Best Staff Nurse and Best Wards (psychiatric and neuro wings) were also presented on the occasion. Staff Nurses Ms. Shyamala (Paediatric Neurology Ward, Neuro Centre), Ms. KO Mary (Psychiatry Ward) and Ms. M. Jaya (Casualty Block) bagged the Best Nurses Award for the year 2015–16. The Best Ward Awards were presented to Psychiatric Special Ward (C Block), Male Neurology Ward (Neuro Centre and Casualty Block) and Stepdown Ward (Neuro Centre and Casualty Block).

A poster exhibition based on the Nurses Day Theme by students from the College of Nursing, NIMHANS was also held.

World No Tobacco Day

Centre for Addiction Medicine (CAM), NIMHANS organised an exhibition and awareness rally to commemorate the World No Tobacco Day (WNTD) on 31 May 2016.

The exhibition was based on tobacco related harm for the public on the OPD premises. Faculty, staff and students of NIMHANS took part in the anti-tobacco rally that took off from the Department of Psychiatry and culminated at the Aswhini Hall of the Institute. An online talk on cessation
and current pharmacological approaches was also organised at CAM Women's Ward on the occasion.

**International Day of Yoga**

NIMHANS Integrated Centre for Yoga organised week-long programmes to mark the 2nd International Day of Yoga from 20 to 26 June 2016. The programmes included mass yoga session, exhibition on science of yoga for mental health, yoga competitions for staff, students, patients and caregivers, quiz and a workshop on contemplative techniques.

Mass Yoga Session, held on 21 June 2016, evoked enthusiastic response, drawing nearly 800 participants (including the staff and students of NIMHANS).

**Independence Day**

Independence Day was celebrated with patriotic fervour at NIMHANS on 15 August 2016. The unfurling of the National Flag by the Director, NIMHANS and other dignitaries was followed by colourful cultural programmes by the students of NIMHANS College of Nursing and inmates of various wards of the hospital.

**Welcome Meet/Students Get-together**

Welcome Meet/Students Get-together was organized on 1 September 2017, for the new batch (2016-17) of students and research scholars of various academic courses and disciplines.

The Director, Registrar and Deans of various streams of the institute addressed the gathering and shed light on campus resources, programmes and services offered by the Institute. A video on the Institute and its campus life was screened on the occasion for the newly joined students.

New students showcased their talent in singing and dancing at the cultural programme organised on the occasion.

**Teacher's Day**

Teacher's Day was celebrated on 2 September 2016. Prof. SR Leela, Sanskrit Scholar and former member of Karnataka Legislative Council was the chief guest of the event.

Prof. Leela, in her address, proclaimed that Sanskrit is not mere a language but a world view, and referred to percepts from Sanskrit, which say that universality, characterised by harmony, common welfare, and inclusiveness can go a long way in finding solutions to the contemporary problems.

Keeping with the Teacher’s Day tradition, senior faculty members of NIMHANS were honoured for their contributions to the growth of the Institute.
Dr. Ramachandra N. Moorthy Oration

The 12th Dr. Ramachandra N. Moorthy Oration was held on 22 September 2016. Dr. Matcheri S. Keshavan, Stanley Cobb Professor and Vice-Chair for Public Psychiatry, Department of Psychiatry, Beth Israel Deaconess Medical Center and Massachusetts Mental Health Center, Harvard Medical School Boston MA, USA delivered the oration on the topic “Neurobiology of Schizophrenia: From Soft Signs to Hard Science”.

Swachh Bharat Abhiyan

As part of the Gandhi Jayanti celebrations on 2 October 2016, NIMHANS paid rich tributes to the father of the nation and organised clean-up drives to promote Swachh Bharat Mission. Over 300 faculty, staff, students, NSS volunteers and members of the Kayakalp Committee of NIMHANS actively participated in the cleanliness drive.

Volunteers spread in four groups indulged in cleaning of different parts of the hospital campus. In accordance with the directions of the Government of India, cleaning equipment, disposable recycled gloves, biodegradable garbage bags and face masks were provided to all volunteers.

NIMHANS has planned to conduct such drives at least once a fortnight, in accordance with the instructions of the Government of India.

World Mental Health Day

World Mental Health Day, under the theme “Dignity in Mental Health– Psychological & Mental Health First Aid for All”, was observed on 24 October 2016. Hon’ble Justice Subhro Kamal Mukherjee, Chief Justice, High Court of Karnataka graced the occasion as the Chief Guest.

Prof. G. Gururaj, Head, Department of Epidemiology & Centre for Public Health, presented the results/findings of National Mental Health Survey (NMHS) a unique collaborative endeavour undertaken by NIMHANS across 12 states of India with active engagement of more than 400 persons during 2014-16. The project was funded by the Ministry of Health and Family Welfare, Government of India.

The summary report of NMHS and various other educational materials were released by the Chief Guest on the occasion. A poster exhibition based on the theme of the year was also held, as part of the celebrations.

Vigilance Awareness Week

The Vigilance Awareness Week with the theme ‘Public Participation in Promoting Integrity and Eradicating Corruption’was observed by NIMHANS from 31 October 2016 to 5 November 2016. Valedictory function of the week-long programme was held on 4 November 2016. Shri. NS Megharikh, Commissioner of Police, Bengaluru City was the Chief Guest.
Shri. NS Megharikh stressed the need to eliminate corruption for taking the economic growth to needy sections of the society. He said it was imperative that an aware, active and empowered public is involved in any anti-corruption campaign.

As part of the Vigilance Awareness Week, NIMHANS organised various activities including workshops and display of banners and posters at prime locations in the Institute.

**Karnataka Rajyotsava**

Karnataka Rajyotsava was celebrated with great enthusiasm and fanfare on 26 November 2016. Shri. Chakravarthy Sulibele, noted writer and orator, was the Chief Guest at the function.

Shri. Chakravarthy Sulibele, noted writer and orator, addressing the gathering at Karnataka Rajyotsava celebrations

Shri. Chakravarthy Sulibele, in his captivating speech, spoke about the rich heritage of Karnataka and threw light on the achievements of Kannadigas in various spheres of life. Noted artist Vinay Hegde presented his innovative new art form, GlowArt, to the audience. He brought forth intricate portraits, themes and images during the show in a mesmerising way.

The programmes of the day generated a sense of pride in the minds of the audience for being a part of a culture that is so rich and vibrant.

Dr. Shashidara Bhuggi conferred the degrees on the successful candidates and delivered the Graduation Day Address. Meritorious students received awards from the Chief Guest and other dignitaries.

Dr. BV Kathyayani, Principal, College of Nursing, NIMHANS presented the activity report of the college and highlighted significance of Lamp Lighting Ceremony. Dr. Ramachandra, Head, Department of Nursing, administered the Florence Nightingale pledge to the students.

As part of the Lamp Lighting Ceremony celebrations, students and trainees lit the lamp symbolising their dedication to the profession, and took an oath to serve humanity with compassion and empathy.

**International Day of Persons with Disabilities**

International Day of Persons with Disabilities, under the theme ‘Achieving 17 Goals for the Future We Want’ was observed on 14 December 2016.
The Chief Guest of the event was Dr. Kamlesh Kumar Pandey, Chief Commissioner for Persons with Disabilities, Ministry of Social Justice & Empowerment, Government of India.

Report of the national seminar--ETTID 2016 was presented by Dr. Jagadisha Thirthalli, Organizing Secretary of the event.

NIMHANS Calendar 2017 and other educational materials were released by the Chief Guest. PRS Volunteers and New India Assurance Team were also felicitated on the occasion.

Dance Drama on the Rights of Persons with Disabilities was performed by the students of the Department of Psychiatric Social Work, NIMHANS.

International Day of Persons with Disabilities

**21st Convocation of NIMHANS**

The 21st Convocation of National Institute of Mental Health and Neuro Sciences (NIMHANS), Bengaluru was held on 27th December 2016.

Shri. HN Ananth Kumar, Hon’ble Minister for Chemicals and Fertilizers, Government of India graced the occasion as the Chief Guest and delivered the Convocation Address. Shri. Jagat Prakash Nadda, Hon’ble Minister for Health & Family Welfare, Government of India and President, NIMHANS presided over the ceremony in the august presence of Dr. Sharanprakash R. Patil, Hon'ble Minister for Medical Education, Government of Karnataka & Vice-President, NIMHANS and Dr. A. S. Kiran Kumar, Chairman, Indian Space Research Organisation (ISRO), who was the Guest of Honour.

The Chief Guest, Shri. Ananth Kumar, in his convocation address, urged the Union Minister of Health & Family Welfare to grant aid to the tune of Rs. 200 crore for setting up the proposed north campus of NIMHANS. He also assured that the Mental Healthcare Bill would be passed during the upcoming budget session of the Parliament.

Delivering the presidential address, Shri. Jagat Prakash Nadda lauded the efforts of NIMHANS in undertaking National Mental Health Survey (NMHS), one of the largest mental health “Research and Action” oriented studies in recent times. He called for massive sensitization programmes considering the huge burden of mental, behavioural and substance use disorders, in India. He also assured extending all possible support for the (proposed) establishment of the north campus of NIMHANS and the modern trauma care centre.

The Guest of Honour, Dr. AS Kiran Kumar, in his address, stressed the importance of inclusive approach in strengthening the health care services and technology. He said that ISRO had been successful in utilising its satellites to provide cost-effective and high quality telemedicine facilities in rural areas. With newer technology coming in, there’s a necessity for doctors and engineers to come together for breakthroughs in healthcare sector, he added.

Dr. Sharanprakash R Patil, who also spoke on the occasion, said the District Mental Health Programme was launched in Karnataka considering the growing need for mental and behavioural health services. He also added that the psychiatrists had been appointed in more than 20 districts and plans are afoot to train all doctors working in government hospitals on mental health.

As many as 168 students (141 in person and 27 in-absentia) were awarded various degrees (post-graduate degrees, doctoral and post-doctoral degrees, diplomas and fellowships) on successful completion of their academic programmes at the Convocation. Ten medicos were honoured with special awards for their exemplary performance in various streams.

**Hindi Week Valedictory**

Valedictory Function of the Hindi Week 2016 Celebrations was held on 28 December 2016. Dr. Sohan Lal, Asst. General Manager (Official Language), Canara Bank (HO), Bengaluru
& Member Secretary, TOLIC (Banks), Bengaluru was the Chief Guest.

The Chief Guest, in his address, emphasized the importance of promoting Hindi as official language and necessity of learning Hindi as ‘Rashtra Bhasha’.

Certificates (of attendance) to the participants of the Hindi Workshop 2016 and prizes to the winners of various competitions, held as part of the Hindi Week Celebrations, were distributed on the occasion.

Martyrs’ Day

Martyrs’ Day (Shaheed Diwas or Sarvodaya Day) was observed with solemnity at NIMHANS on 30 January 2017.

The staff and students of NIMHANS gathered at different centres on the campus and paid tributes to all those who sacrificed their lives for the motherland, by observing silence for two minutes.

Prof. BN Gangadhar, Director, NIMHANS briefed the gathering about the significance of the day—which also marks the death anniversary of Mahatma Gandhi—and the instructions issued by the union government to ensure that the occasion was observed in a befitting manner. Respectful homage was also paid to the army Jawans who achieved martyrdom due to the avalanche in Kashmir.

NIMHANS towards Green and Clean Campus

“NIMHANS towards Green and Clean Campus” initiative was launched on 30 January 2017 to promote good ecosystem and restore nature’s equilibrium for sustainable development on the campus.

The movement spearheaded by a committee under the chairpersonship of Dr. A Nalini, Professor of Neurology, envisages transforming NIMHANS into a ‘model’ green and clean campus through various sustainability initiatives.

The green initiative took root with the newly joined and the superannuating employees (in the month of January) planting saplings at the Psychiatry Block on the institute campus.

43rd Institute Day

The recipient of the Padma Vibhushan, India's second highest civilian award, and several international awards, Sri Sri captivated the audience with his talk on mind, meditation and consciousness.

Sri Sri, in his talk, expounded on the ancient Eastern idea of health, and how education about any system of health is only complete with the knowledge of the Self. Lauding the services of NIMHANS to the nation, he urged the faculty and staff of the Institute to take up the cause of creating mental wellness across the country, in the form of daily rituals to keep the mind healthy and setting up of happiness clinics where people could go for counselling or meditation.

Sri Sri added that NIMHANS should not only look at treating the sick, but also probe into the mechanics of consciousness, with some ancient texts such as Yoga Vasishtha as reference points. The humanitarian leader also interacted with the audience and answered their questions.

Prof. BN Gangadhar, who presided over the event, presented a report highlighting the various developments and achievements of the Institute during the past year.

World Social Work Day

World Social Work Day, the high point of the global social work calendar, was celebrated under the theme ‘Promoting Community & Environmental Sustainability in Mental Health’ on 21 March 2017.

Outreach programme and symposia on Sustainable Social Work Education Models, Expanding Horizons of Social Work Practice, and Sustainable Community Based Programmes were also held as part of the celebrations.

Eminent academicians Prof. GN Narayana Reddy, former director of NIMHANS; Prof. Shankar H. Pathak, former head, Department of Social Work, Delhi University; and Prof. PS Dikshit, former head, Department of Social Work, Delhi University were felicitated on the occasion.

National Science Day

NIMHANS celebrated National Science Day, under the theme ‘Science and Technology for Specially Abled Persons’, on 28 February 2017 in a befitting manner. A host of science-based programmes were organised on the occasion to commemorate eminent physicist Sir CV Raman's discovery of the 'Raman Effect', which won India its first Nobel Prize in the field of science.

Science enthusiasts and scores of students from various schools and colleges across the city thronged the NIMHANS Convention Centre to witness the mega expo on 'Brain, Mind and Behaviour'. Mind game for the children and adults, demonstrations of brain activities, cognitive tests for assessing attention, cognition and display of instruments and equipment demonstrating the functions of mind and brain formed the major highlights of the eventful day. A special public lecture on “Discovery is the Mother of Necessity” by Dr. Patnam R. Krishnaswamy, National Advisor, Organisation for Rare Diseases India and Visiting Chair, Centre for Nano Science and Engineering (CeNSE), IISc Bengaluru, was also held as part of the celebrations.

Dr. CN Manjunath, renowned cardiologist and Director of the Sri Jayadeva Institute of Cardiovascular Sciences and Research, graced the occasion as the Chief Guest.

The event—which aimed at spreading the message about the significance of science in the daily lives of the people and kindling scientific temper among the young generation—received an overwhelming response and the footfalls needed to make it a huge success, acting as an impetus to organise a bigger fair next year.
**Dr. D.N. Prasad Oration**

Dr. Soumya Swaminathan, Director General, ICMR & Secretary, Department of Health Research, Ministry of Health & Family Welfare, Govt. of India delivered Dr. D.N. Prasad Oration on the topic “Challenges and Opportunities in TB for 21st Century” on 13 March 2017.

**7. DONATIONS**

NIMHANS receives diverse support from various individuals and organisations. Donors generously make financial contributions that support patient care, research, education and prevention programmes. Donations were received from Commander H. Anand (Rs. 50,000/-), Mr. Ankur Gupta (Rs. 1,50,000/-), Mr. M. Jayapal (Rs. 50,000/-), Dr. S. K. Shankar (Rs. 1,10,000/-), Mrs. K.S. Srimathi (Rs. 1,10,000/-) and Dr. B. V. Kaplana (Rs. 2,50,000/-) towards patient care and other initiatives during the period under review.

**8. POLICY IMPLEMENTATION**

**8.1 Implementation of Right to Information Act**

NIMHANS has implemented the Right to Information Act 2005 as per the directions of Central Information Commission, Government of India, and the Ministry of Health and Family Welfare, Government of India. A team of Central Public Information Officers headed by the Registrar of the Institute—who is the Appellate Authority—is responsible for providing information to a person who seeks information under the RTI Act. The Public Relations Officer serves as the liaison officer and handles correspondence with the authorities concerned. Quarterly returns pertaining to RTI are filed and submitted to Central Information Commission online as per the prescribed guidelines. During 2016-17, the Institute received about 80 RTI applications, and replies to the queries were sent within the stipulated time.

**8.2 Government of India Reservation Policy**

NIMHANS functions under the Ministry of Health and Family Welfare, Government of India and follows the reservation policy as laid down by the Central Government for faculty recruitment and student admission.

**8.3 Persons with Disabilities Act**

Reservation to Persons with Disabilities is provided by NIMHANS in line with the provisions of the Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995 in various posts and services of the Institute. NIMHANS is also involved in various activities initiated to remedy the exclusion of persons with disabilities by focusing on promoting accessibility, as well as removing different types of barriers in the society.

**8.4 Official Language Policy**

The Official Language Implementation policies and Constitutional provisions (Official Languages Act, 1963 and the Official Languages Rule, 1976) are being strictly implemented at NIMHANS under the guidance of the Department of Official Language, Union Ministry of Health and Family Welfare, Government of India. Advertisements, notifications, name boards, and sign boards are in Hindi and English. Hindi courses/classes, Hindi typing and stenography training are conducted regularly.

**8.5 Internal Complaints Committee**

The Internal Complaints Committee (ICC) has been constituted at NIMHANS (in 2015) as per the provisions of the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013. During 2016-2017, the ICC received a total of seven complaints, which all led to a preliminary enquiry. One case was closed at the request of the complainant, one was referred to the administration, three went on for reconciliation and two went on to a complete enquiry. Recommendations of the ICC were sent to the administration for appropriate disciplinary action. A few sensitisation programmes were also carried out during the period.
This year, NIMHANS completes five years as an ‘Institute of National Importance’. The milestone may be small, but is emotionally important. The milestone has been achieved through the efforts of many persons who have worked hard, both in leadership roles and behind the scenes. It is my pleasant task to lead the Institute forward in the coming years. What have been the major achievements during this period, and what lies on the road ahead?

The achievements and challenges are many, as this volume of our Annual Report so emphatically testifies, and it would be hard to pick any one as overshadowing the rest. I will, however, consider a few.

Trauma is ubiquitous. Trauma spans all age groups. Road traffic accidents comprise the single largest source of physical trauma. The number of cases of trauma at NIMHANS has been increasing sharply, across the years, and this number will continue to increase as the population and vehicles in the city increase. Trauma management is therefore an important concern at NIMHANS, with special attention to traumatic brain injury. NIMHANS has played an important role in trauma care, over the years, starting with promoting the use of helmets to prevent traumatic brain injury in two-wheeler riders and and pillion riders. The emergency and neurosurgical services at NIMHANS are well equipped to manage patients with traumatic brain injury. However, many if not most patients with head injury also have multiple organ damage. The comprehensive care of trauma is consequently an important need. The development of a NIMHANS trauma care centre in the proposed Northern Campus will therefore be another landmark in the history of the institution.

The recently published National Mental Health Survey (October, 2016) draws attention to the pervasive problem of psychological and psychiatric dysfunction in the community. Given the scarcity of mental health human resources, it becomes important to consider newer and more efficient ways of reaching the unreached. In this context, in the field of Telemedicine, NIMHANS has harnessed digital technology to successfully reach the unreached parts of the country. Through telemedicine, psychiatric services have been made available to patients in many remote districts. There could be scope for the extension of such services in other parts of the country, and to patients with neurological and related disorders, as well. The possibilities are many and potential is immense.

The number and percentage of elderly in the population is expected to increase in the coming years; this is an inevitable demographic change that has already characterized developed countries. Elderly persons suffer from unique mental health challenges. One such challenge is cognitive decline. Decreasing the risk of cognitive decline and promotion of healthy aging is possible through the adoption of healthy lifestyle behaviours. The application of preventive medicine principles in geriatric psychiatry is an important need. NIMHANS is conducting significant research in the field. One such study is a longitudinal follow up of a cohort of elderly adults in neighbouring taluks.

On the practical front, we must acknowledge that our resources, though impressive, are not limitless. In this context, the hospital handles large caseloads in emergency, outpatient, and inpatient care. The caseloads are increasing sharply and, with the manpower and facilities available, it is often not humanly possible to do full justice to all patients. We are increasingly facing the necessity to preferentially address the more difficult and more serious cases, and to refer or transfer the less difficult, less serious, and recovering cases to neighbouring hospitals. There is a need to form a treatment network with neighbouring hospitals for the efficient and humane management of patients with neurological, neuropsychiatric, and neurosurgical disorders. NIMHANS is otherwise modernizing the outpatient department services to improve the efficiency and delivery of outpatient care to the large numbers of patients who attend outpatient services each day.

With the setting up of medical cyclotron at the Institute, a new era of modern technology for research has dawned for the study of the basic neurobiology of neuropsychiatric disorders, and for the development of newer treatments in the field. Existing technical infrastructure for disciplines ranging from molecular biology to neuroradiology include facilities for proteomics, magnetoencephalography, and others; these have already been described in earlier editions of this report.

There is much more that can be said, but the contents of this volume will speak for themselves. With this background, we dedicate ourselves to patients and to the nation, at the completion of half a decade of bringing NIMHANS to the forefront of research, training, and treatment in the fields of neurology, neurosurgery, mental health, and related disciplines.

Prof. B. N. Gangadhar
Director
Smt. BV Hemalatha  
Ward Supervisor  
DOJ: 06.09.1979  
DOR: 30.04.2016

Sri. HN Vittal Rao  
Jr. Engineer (Electrical)  
DOJ: 20.02.1989  
DOR: 30.04.2016

Sri. GN Kodandarama  
Manager  
DOJ: 02.11.1987  
DOR: 30.04.2016 (VRS)

Sri. SK Viswanath  
Steno Gr - I  
DOJ: 12.11.1984  
DOR: 30.04.2016

Sri. C Jawarappa  
Driver Gr - I  
DOJ: 20.08.1982  
DOR: 30.04.2016

Sri. Yellappa  
Hospital Assistant  
DOJ: 15.03.1979  
DOR: 30.04.2016

Sri. Janakamma C  
Hospital Assistant  
DOJ: 10.10.1985  
DOR: 30.04.2016

Sri. S Venkatesh  
Special Officer  
DOJ: 03.03.1975  
DOR: 31.05.2016

Smt. PD Sreelatha Kumari  
Nursing Tutor  
DOJ: 10.07.1985  
DOR: 31.05.2016

Dr. Srikala Bharath  
Prof. of Psychiatry  
DOJ: 07.04.1993  
DOR: 20.05.2016 (VRS)

DOJ: Date of Joining; DOR: Date of Retirement
Prize winning entry in the Art Competition conducted by Psychiatric Rehabilitation Services, NIMHANS.
National Institute of Mental Health and Neuro Sciences

Research Collaborations

National

International

Lifting The Burden in Official Relation with the World Health Organization The Global Campaign against Headache
AWARDS, HONOURS AND KEY ASSIGNMENTS

Biophysics

Dr. Preeti Joshi, Professor and Head, (i) Member (a) Task Force on Neuro Disease Biology, Department of Biotechnology, Ministry of Science & Technology, Govt. of India, New Delhi (b) Expert Committee for Innovative Young Biotechnology Award (IYBA), Department of Biotechnology, Ministry of Science & Technology, Govt. of India, New Delhi (ii) Board of Studies, Biophysics, Banaras Hindu University, Varanasi.

Dr. Padmanabhan B, Professor (i) Treasurer, Indian Crystallography Association (ii) Awarded Membership of National Academy of Medical Sciences (MNAMS, India).

Biostatistics

Dr. K Thennarasu, Professor and Head, (i) Member (a) JIPMER Scientific Advisory Committee (JSAC) (b) Advisory Committee, International Conference on Contemporary Trends in Clinical Psychology Training, Research and Practice, NIMHANS, Bengaluru, 7-19 November 2016 (c) Data Safety Monitoring Board (DSMB), clinical trial titled ‘Mood Stabilizer Plus Antidepressant Versus Mood Stabilizer Plus Placebo in the Maintenance Treatment of Bipolar Disorder’, funded by the Canadian Institutes of Health Research (CIHR) (d) Advisory Committee and DSMB, Indian Council of Social Science Research (ICSSR) Project (e) DSMB for NIH project (f) Editorial Board, Journal of Human Reproductive Sciences.

Dr. Marinuthu P, Additional Professor, Member (a) Executive Council, International Biometrics Society (India Region) (b) Editorial Board, Biometrics and Biostatistics Open Access Journal.

Dr. Mariamma Philip, Associate Professor, (i) Member, DSMB, Development of KMC Sensor for Position and Temperature, project funded by Bill and Melinda Gates Foundation (ii) Chairperson, Ethics Committee, College of Nursing, Narayana Hrudayalaya, Bengaluru.

Dr. Binukumar B, Assistant Professor (i) Member, Editorial Board, Biometrics and Biostatistics Open Access Journal (ii) Treasurer, Indian Society for Medical Statistics (iii) Chaired scientific session (a) 34th Annual Conference of Indian Society for Medical Statistics (ISMSCON- 2016), Indian Statistical Institute, Kolkata, 1-3 December 2016 (b) South Asian Evidence Summit (SES), PHESA, Manipal University, Manipal, 5-7 January 2017.

Child & Adolescent Psychiatry

Dr. Shekhar Seshadri, Professor and Head, (i) Member (a) Advisory Board, Centre for Child and the Law (CCL), National Law School of India University (NLSIU), Bengaluru (b) UGC Expert Committee on Ragging (c) Advisory Board, Emotional Safety of Schools, Teachers Foundation (d) Governing Council, Richmond Fellowship, Bengaluru Branch (e) Management Committee, Richmond Fellowship – Research and Training Centre (f) Board of Directors, Christel House Learning Centre, Bengaluru (g) Advisory Board, Cambridge School, Bengaluru (ii) Secretary General, Richmond Fellowship, National Board (iii) Chairperson, House Committee and Admission Committee, Asha House Richmond Fellowship, Bengaluru.

Dr. Shoba Srinath, Sr. Professor, (i) received ‘Lifetime Contribution Award’ by Information and Resource Centre (IRC) for contributions to the field of medicine, Kalaangana cultural fest, Bengaluru, 12 November 2016 (ii) delivered Dr. Girindra Sekhar Bose Oration, Indian Association of Private Psychiatry (West Bengal State), Kolkata, 30 January 2017 (iii) Member (a) Advisory Body, Jyothy Kendriya Vidyalaya School, Jyothy Charitable Trust, Bengaluru (b) Governing Council, Dr. SR Chandrashekar Institute of Speech and Hearing, Bengaluru (c) Board of Studies, Karnataka Parents Association of Mentally Retarded Citizens, Bengaluru (iv) Visiting Professor, The Institute of Psychiatry – A Centre of Excellence, Kolkata.

Dr. Satish Girimaji, Professor, (i) Resource person (a) White Swan Foundation, Bengaluru (b) Association for the Mentally Challenged (AMC), Bengaluru (ii) Forum Member, World Innovation Summit Health (WISH) on Autism (iii) Member (a) Core Committee, National Mental Health Survey of India (b) Ethics Committee, Indian Institute of Science (IISc), Bengaluru.

Dr. John Vijay Sagar K, Additional Professor, (i) Member (a) Technical Resource Group on Adolescent Mental Health, Ministry of Health & Family Welfare, Govt. of India (b) Editorial Board, Andhra

Dr. Preeti Jacob, Assistant Professor, Member, Indian Association of Child and Adolescent Mental Health (IACAM).

Dr. Salah Basheer, PhD Scholar, received international travel support grant, Department of Science and Technology, Govt. of India to take part in International Association for Child and Adolescent Psychiatry and Allied Professions World Congress (IACAPAP 2016), Calgary, Canada, 18-22 September 2016

Dr. Sowmyashree, PhD Scholar, received (a) travel grant from International Society for Autism Research (INSAR) to attend International Meeting for Autism Research (IMFAR), Baltimore, USA, 11-14 May 2016 (b) ICMR travel grant to attend 22nd International Annual Conference of Child Psychiatry and Allied Professions (IACAPAP), Calgary, Canada, 18-22 September 2016.

Dr. Pooja Panchal, DM Resident, received Donald J. Cohen Fellowship to attend 22nd International Annual Conference of Child Psychiatry and Allied Professions (IACAPAP), Calgary, Canada, 18-22 September 2016.


Dr. Ganne Chaitanya, Sr. Resident, received CIS-INSA Travel Fellowship for attending 11th AOEC, Hong Kong, 13-16 May 2016.

Dr. Preethish Kumar V, Sr. Resident, received (a) travel grant from Ultranex Pharmaceuticals for participating in Summer School of Myology, Paris, June 2016 (b) Travel Bursary Award, Asia Oceania Association of Neurology, 15th Asian and Oceanian Congress of Neurology (AOCN 2016), Kuala Lumpur, 18-21 August 2016.

Dr. Velmurugan Jayabal, Sr. Resident, received ILAE Travel Bursary Award for participating 11th Asian & Oceanian Epilepsy Congress (AOEC), Hong Kong, 13-16 May 2016.

Dr. Soundarya S, Sr. Resident, received (a) RSA Student Merit Award for the 2017 RSA Scientific Meeting, Denver, SA, June 2017 (b) Travel Fellowship, Wellcome Trust/DBT India to attend Science Communication Workshop (SciComm), Hyderabad, 2016.

Clinical Neurosciences


Dr. Mahendra P Sharma, Professor and Head, (i) Member (a) Expert Committee, Rehabilitation Council of India (RCI) (b) Special Board of Studies, Clinical Psychology and Education Technology Programme, Pondicherry University (ii) Honorary President, Karnataka Association of Clinical Psychologists (iii) Honorary Member, Advisory Board of Resurge Academy Pvt. Ltd., Chennai (iv) chaired a symposium on ‘Neural Correlates of Mindfulness and its Applications in Medical Settings’, International Conference on Contemporary Trends in Clinical Psychology: Training, Research and Practice, NIMHANS Bengaluru, 17-19 November 2016 (v) Chairperson, International Conference on Creativity and Cognition in Art & Design, NIMHANS, Bengaluru, 19-21 January 2017.


Clinical Psychology

Dr. Uma Hirisave, Professor, (i) Expert Associate, Simplify Parenting Project, Parentof Solutions Pvt. Ltd., Bengaluru (ii) EC Member, IACAMH (iii) Member, Academic Committee, NIMH (iv) Expert Member, Gifted Education Programme, NIAS, Bengaluru.

Dr. Anisha Shah, Professor, (i) Member (a) International Society for Emotion Focused Therapy (b) International Family Therapy Association (c) Society for Exploration of Psychotherapy Integration (International Affiliate) (d) American Psychological Association and its divisions of International Psychology, Family Psychology, Counseling Psychology, Humanistic Psychology and Psychology for Women (e) Governing Council, Richmond Fellowship Society (India), Bengaluru Branch (ii) Scholarly Affiliate, Division-Theoretical and Philosophical Psychology, American Psychological Association (iii)
Fellow, IACP, IASP, WAPR (iv) Professional Reviewer, proposals for 2017 National Multicultural Conference and Summit, Portland, Oregon, USA, 4-6 January 2017.


Dr. Seema Mehrotra, Professor, External Member, Institute Ethics Committee, Shankara Cancer Foundation.

Dr. Jamuna Rajeswaran, Professor, Psycho Oration Award, 43rd National Annual Conference of the Indian Association of Clinical Psychologists (NACIACP), Kovai Vidyashram, Coimbatore, 27-29 January 2017.

Dr. Paulomi M Sudhir, Additional Professor, (i) Member (a) Data Monitoring and Safety Committee (DMSC), PREMIUM randomized controlled trials of lay counsellor delivered psychological treatments for depressive disorders and harmful drinking in primary care, trial conducted through a partnership of the London School of Hygiene & Tropical Medicine, UK (the trial sponsor), Sangath, Goa and the Directorate of Health Services, Government of Goa (b) Advisory Board, PRIDE trial for psychological interventions for adolescents, a Wellcome Trust Senior Research Fellowship, conducted through a partnership of the London School of Hygiene & Tropical Medicine, UK (the trial sponsor), Sangath, Goa and the Public Health Foundation, New Delhi (ii) received Best Paper Award, ‘Role of Motivation in the Outcome of Psychotherapy’, International Conference on Contemporary Trends in Clinical Psychology: Training, Research and Practice, NIMHANS, Bengaluru, 17-19 November 2016.

Dr. Keshav Kumar J, Additional Professor, Member, Academic Council and External Expert, Board of Studies for Psychology, Christ University, Bengaluru.

Dr. Manjula M, Additional Professor, Member (a) Board of Studies for Undergraduate and Postgraduate studies in Psychology, Department of Applied Psychology, Pondicherry University, Puducherry (b) Advisory Committee, project PRIDE-PRemium for Adolescents, Public Health Foundation of India.

Dr. Devvarta Kumar, Additional Professor, Member, expert group for development of training manual for psychologists as part of the Mental Health Service Delivery initiative, under National Mental Health Programme (NMHP), Ministry of Health and Family Welfare, Govt. of India.

Dr. Poornima Bhola, Additional Professor, (i) attended International Steering Committee meeting, Society for Psychotherapy Research Collaborative Research Network (SPR/CRN), Jerusalem, Israel, 20-21 June 2016 (ii) Member (a) Expert Committee for validating the tool for the ICSSR funded research project titled: Family relationships, Marriage related beliefs and expectations and its association with mental health in new Indian middle class – A transgenerational approach, Bengaluru, 14 June 2016 (b) Expert Committee for FGD for the ICMR funded project, Perceptions, Attitudes and Experiences regarding Sexuality of People with Severe Mental Illness: A study from Multiple Perspectives, Richmond Fellowship Society, Bengaluru, 3 August, 2016 (c) Scientific Committee, 2nd Indian Cancer Congress (ICC) 2017, Bengaluru, 8-12 November 2017 (d) Scientific Committee, International Conference on Current Trends in Clinical Psychology, Bengaluru, 17-19 November 2017 (e) Committee for the Training and Research Centre in Mental Health, Richmond Fellowship Society, Bengaluru (f) Doctoral Committee, KU Leuven University, Belgium (g) Doctoral Committee, Tata Institute of Social Sciences, Mumbai (h) Ethics Committee, Karunashraya Trust, Bengaluru (i) Ethics Sub-Committee, Indian Association of Clinical Psychologists (iii) Consultation for UNFPA-TISS Centre of Excellence for Adolescents and Youth, NIMHANS, Bengaluru, 2 September 2016 (iv) took part in Consultation Meeting, National Commission for Women, and delivered a presentation on ‘Addressing concerns of women admitted to psychiatric institutions in India: Improving living conditions and meeting rehabilitation needs’, New Delhi, 6 September 2016 (v) Editorial Board Member (a) Journal of Mental Health Education (b) Journal of Psychosocial Rehabilitation and Mental Health (vi) Associate Editor, Psychological Studies journal.
Dr. Roopesh BN, Associate Professor, (i) Treasurer, Indian Association of Clinical Psychologists (ii) Executive Secretary, Cognitive Neuroscience Society of India (iii) Executive Member, Neuropsychological Society of India (iv) filed (provisional) for two patents (a) Diagnosis and intervention device for ADHD (b) Device to help children with Specific Learning Disability (SLD).

Dr. Thomas Kishore M, Associate Professor, Member (a) Expert Committee on Clinical Psychology, Rehabilitation Council of India, New Delhi (b) Academic Council, National Institute for the Empowerment of Persons with Multiple Disabilities, Chennai (c) Expert Committee, Development of Screening Tool for Children with SLD, Sarva Shiksha Abhiyan, Govt. of Tamil Nadu.

Dr. Veena A Satyanarayana, Assistant Professor, (i) Associate Editor, Mental Health Section, BMC Women’s Health journal (ii) received Best Poster Award, ‘Experiences of pregnant women’s exposure to Second Hand Smoke (SHS), Home - A Qualitative Study from India and Bangladesh’, International Conference of Marce Society on Perinatal Mental Health, Melbourne, Australia, 23-25 September 2016 (iii) received Prof. Barbara Hanfstingl Best Paper Award, ‘Gender disadvantage, psychological distress and resilience in adolescent Indian girls’, 6th InSPA International Conference, Pondicherry University, Puducherry, 13-15 October 2016.

Dr. Shantala Hegde, Assistant Professor, (i) Science Fellow, Exploring Mind Through Music 2016, The Shepherd School of Music, Rice University, Houston, Texas, USA, 6-10 June 2016 (ii) Fellow, Helsinki Summer School in Cognitive Neuroscience, Cognitive Brain Research Unit Institute of Behavioral Sciences and Cicero Learning, University of Helsinki, Finland, 11-17 August 2016 (iii) felicitated by the Bharatiya Saamagga Sabha at Indian classical music festival—Abhijnana Thyagaraja Sangeetham 2017, 17 January 2017 (iv) Consultant, team working towards Psychological and Neurocognitive Evaluation of the Metro train drivers, of the Bangalore Metro Rail Corporation limited (BMRCL).

Dr. Gitanjali Narayan, Assistant Professor, (i) Member, International Society for the Study of Personality Disorders (ISSPD) (ii) International Affiliate, American Psychological Association; Primary affiliation: The Society for Qualitative Enquiry in Psychology (iii) Reviewer, Archives of Women’s Mental Health.


Ms. Manpreet Kaur, PhD Scholar, received Best Paper award, ‘Caring the professional care providers: Felt needs and challenges in cancer palliative care centres’, 24th International Palliative Care Conference IAPCON, Coimbatore, 10-12 February 2017.


Mr. Sathvik Goud, Psychologist and Ms. Anupama Ravishankar, Research Associate, received Best Poster award, ‘Felt needs for psychological training to enhance performance: Perspectives of youth engaged in competitive sports’, International Conference on Contemporary Trends in Clinical Psychology: Training, Research and Practice (ICCTCP 2016), NIMHANS, Bengaluru, November 2016.

Ms. Dhanya Chandran, PhD Scholar, selected as one among 40 emerging psychologist researchers from 21 countries around the world under ICP 2016 Emerging Psychologist Program (EPP), 31st International Congress of Psychology (ICP), Yokohama, Japan, July 2016.

Ms. Alafa Jeelani, PhD Scholar, received Best Poster award (a) ‘Effectiveness of neurofeedback training in severe traumatic brain injury: A case study’, Joint Conference of Indian Federation of Neurorehabilitation and Neurorehabilitation Subsection of Indian Association of Neurology (IFNR 2016), Bengaluru, 1-3 April 2016 (b) ‘Support for Linehan’s biosocial model of borderline personality disorder from an Indian sample’, 43rd National Annual Conference of Indian Association of Clinical Psychologists (NACIACP 2017), Coimbatore, 26-29 January 2017.

Ms. Lavanya TP, PhD Scholar, received international travel grant from Indian Council of Medical Research (ICMR), to present a poster in the 14th International Congress on Behaviour Medicine, Melbourne, Victoria, 7-10 December 2016.


Ms. Athulya Jayakumar, MPhil student, received Best Paper award, ‘Struggle to fit in: A case study of a married lady with Homosexual Orientation’, 18th International Conference on Psychopathology and Anxiety disorder, Singapore, 8-9 September 2016.


Dr. Gururaj G, Professor and Head, (i) Invited Member (a) Organizing Committee, International Conference on Autism and Neurodevelopmental Disorders, Thimphu, Bhutan, March 2017 (b) Board on ‘Lifting the Burden’ (global campaign to reduce the burden of headache), a collaboration between the World Headache Alliance, the International Headache Society, the European Headache Federation and the World Health Organization (c) Scientific Committee, 21st International Conference on Alcohol, Drugs and Traffic Safety (T2016), Brazil, 16-19 October 2016.

Dr. N Girish, Professor, Invitee, Karnataka State Mental Health Authority.

Dr. Senthil Amudhan, Assistant Professor, (i) received (a) the prestigious BMJ Award-South Asia, for the year 2015, under Healthcare Innovation category, for development of mental health care delivery model and manual for Accredited Social Health Activists (ASHAs) in India, New Delhi, 19 November 2016 (b) along with MPH students (Dr. Bhujabali, Dr. Harish Babu, Dr. Shilpa, Dr. Charini) received the ‘Best Public Health Video Presentation’, for the video titled ‘Depression: Let’s talk about it’, 28th Annual State Conference of Karnataka Association of Community Health, 9-10 December 2016 (ii) Member, Scientific Committee and chaired two scientific sessions, IACPICON 2016, 11th Annual Conference of Indian Academy of Cerebral Palsy, Bengaluru, 25-27 November 2016.

Dr. Rajalakshmi Gope, Professor and Head (i) Member (a) Board of Studies (Undergraduate and Postgraduate) in Allied Health Sciences, Sri Devaraj Urs Academy of Higher Education and Research, Kolar (ii) Board of Studies, undergraduate and postgraduate courses in the Division of Biological Sciences, Dayananda Sagar College of Arts, Science and Commerce, Bengaluru.

Dr. Chetan GK, Additional Professor, Member (a) Editorial Board, Spandidos Publications (b) Editorial Board, Biomedical Journal (c) Editorial Board, OMICS International (d) Editorial Board, Medical Science Monitor (e) Editorial Board, Cytotechnology (f) Board of Studies, Dept. of Genetics, Bangalore University (g) Board of Studies, Dept. of Genetics and Genomics, University of Mysore (h) Board of Studies, Dept. of Biochemistry, Nitte University.

Dr. Monojit Debnath, Associate Professor, (i) Member (a) Editorial Board, Journal of Genetics and Genome Research (b) Editorial Board, Journal of Immunology and Vaccine Technology (ii) External Subject Expert, Doctoral Committee, Faculty of Medicine, Sri Devaraj Urs Academy of Higher Education and Research, Kolar (iii) Expert, syllabus of MSc in Molecular and Human Genetics of Biotech Consortium India Limited (BCIL), Department of Biotechnology, Ministry of Science and Technology, Govt. of India, New Delhi.

Dr. Mathivanan Jothi, Assistant Professor, Member, Board of Studies, Biotechnology, Bharathiar University, Coimbatore.
Neuroanaesthesia & Neurocritical Care

Dr. Ramesh VJ, Professor and Head, Secretary, ISNACC.

Dr. Umamaheswara Rao GS, Sr. Professor, (i) received the prestigious Dr. BC Roy Award- Eminent Medical Teacher 2016 by the Hon’ble President Shri Pranab Mukherjee, Rashtrapatii Bhavan, New Delhi, 28 March 2017 (ii) delivered JNMC Oration, 32nd ISACON South & 32nd ISA Karnataka State Conference 2016, Belagavi, 19-21 August 2016 (iii) Member, Board of Studies, Neurosciences, SCTIMST, Trivandrum (iv) Expert Member, SBMT Programme Management Board.

Dr. Umamaheswara Rao GS, Sr. Professor, receiving Best Research in Pain Award 2015-16, at the 2nd International Conference on Recent Advances in Pain, Kolkata

Dr. Radhakrishnan M, Additional Professor, Treasurer, ISNACC.

Dr. Sriganesh K, Additional Professor, (i) received (a) ICMR International Fellowship (Young Scientist), McMaster University, Hamilton, Canada, January-July 2016 (b) Best Research in Pain Award 2015-16, for the study titled ‘Reporting quality of abstracts of randomized controlled trials in major pain journals before and after publication of CONSORT extension for abstracts: A systematic survey’, 2nd International Conference on Recent Advances in Pain, Kolkata, 25-28 August 2016 (ii) Member, Executive Committee, Karnataka Chapter of ISSP.

Dr. Sriganesh K, Additional Professor, receiving Best Research in Pain Award 2015-16, at the 2nd International Conference on Recent Advances in Pain, Kolkata

Dr. Bharath S, DM Student, received (a) KOP’s Award (Neuroanaesthesia sub-specialty), ISACON 2016, Ludhiana, 25-29 November 2016 (b) 2nd prize in poster presentation, ISNACC 2017, Chandigarh, 24-26 February 2017.

Dr. Bharath S, DM Student and Dr. Amitesh Pandey, DM Student, won Quiz Competition, ISNACC 2017, Chandigarh, 24-26 February 2017.

Dr. Das BP, PDF, received (i) 2nd prize, Best Poster Presentation, World Trauma Congress 2016, 3rd International Congress of WCTC, New Delhi, 18 August 2016 (ii) 1st prize, Best Scientific e-Poster Presentation, Criticare, 2017, Kochi, 4 February 2017 (iii) Education Grant Award of SGD 1,000, 4th SG-ANZICS Intensive Care Forum, Singapore, 20-24 April 2017.

Dr. Das BP, PDF, receiving Best Scientific e-Poster Presentation prize at Criticare, 2017, Kochi

Neurochemistry

Dr. Rita Christopher, Professor and Head, Member (a) PhD Registration Committee, Rajiv Gandhi University of Health Sciences (RGUHS), Bengaluru (b) IEM Steering Committee, Food Safety and Standards Authority of India, Govt. of India (c) Board of Studies, Dayananda Sagar University, Bengaluru (d) Institutional Biosafety Committee, Institute of Bioinformatics, Bengaluru.

Dr. Sarada Subramanian, Additional Professor, Member (a) Executive Committee, Society for Neurochemistry, India (SNCI) (b) Doctoral Committee, VIT University, Vellore (c) Doctoral Committee, SASTRA University, Thanjavur.

Dr. Srinivas Bharath MM, Additional Professor, Member (a) Ethics Committee, Rangadore Memorial Hospital, Bengaluru (b) Ethics Committee, Karunashraya (Bangalore-Hospice Trust), Bengaluru (c) Institutional Biosafety Committee, Kenwell BioPharma Pvt. Ltd., Bengaluru (d) Board of Studies-Biochemistry and Molecular Biology, Department of Biochemistry, University of Mysore.
Dr. Nandakumar DN, Additional Professor, Member (a) Executive Committee, Society for Neurochemistry India (SNCI) (b) Advisory Committee, National Urban Health Mission (c) Doctoral Committee, Department of Biotechnology, Dayananda Sagar College of Engineering, Bengaluru.

Dr. Ravish H, Assistant Professor, Member, Editorial Board, Vivian Publication.

Dr. Majumdar V, PDF, received FENS-IBRO/PERC travel grant to participate in FENS Forum 2016, Copenhagen, 2-6 July 2016.

Ms. Supriya M, PhD Scholar, (i) received ESRF and DBT-CTEP travel grants to participate in 25th European Stroke Conference, Italy, 13-14 April 2016 (ii) awarded CSIR-Senior Research Fellowship 2016.

Ms. Shruthi SR, PhD Scholar, (i) awarded ICMR- SRF for the project entitled: Elucidation of the role of estrogen in the etiopathogenesis of aneurysmal subarachnoid hemorrhage (aSAH) - for Senior Research fellowship, NIMHANS, Bengaluru, (ii) received ESRF and DBT-CTEP travel grants and Centre for International Co-operation in Science (CICS) travel fellowship to participate in 25th European Stroke Conference, Venice, Italy, 13-15 April 2016.

Ms. Shrutti SR, PhD Scholar, (i) awarded ICMR- SRF for the project entitled: Elucidation of the role of estrogen in the eti-pathogenesis of aneurysmal subarachnoid hemorrhage (aSAH) - for Senior Research fellowship, NIMHANS, Bengaluru, (ii) received ESRF and DBT-CTEP travel grants and Centre for International Co-operation in Science (CICS) travel fellowship to participate in 25th European Stroke Conference, Venice, Italy, 13-15 April 2016.

The Metabolic Laboratory, Department of Neurochemistry, received 100% satisfactory results in the proficiency testing for Screening of Inborn Errors of Metabolism by Tandem Mass Spectrometry (TMS) conducted by Centers for Disease Control and Prevention (CDC), Atlanta, USA, for the year 2016.

Clinical Biochemistry Unit was listed in the “Best Laboratory” category in the External Quality Assurance (EQAS) Program, conducted by Bio-Rad Laboratories.

Neuro Imaging & Interventional Radiology

Dr. Maya Bhat, Associate Professor, received Best Poster award, ‘Novel imaging observation in five cases of Autosomal Recessive Spastic Ataxia of Charlevoix Saguenay (ARSACS)’, 14th Annual Conference of Indian Society of Pediatric Radiology, Kolkata, 10-11 September 2016.


Neurological Rehabilitation


Neurology

The Department of Neurology, NIMHANS received the coveted ICICI Lombard & CNBC-TV18 India Healthcare Award 2015-16 under the “Best Single Specialty Hospital Neurology” for the third time in recognition of the meritorious performance.

Dr. Satishchandra P, Sr. Professor and former Director/Vice-Chancellor, NIMHANS, (i) received Ambassador for Epilepsy Award (India region) in recognition of outstanding contribution to the field of epilepsy by International League Against Epilepsy (ILAE) and International Bureau for Epilepsy (IBE) for the year 2016-2017 (ii) received the coveted Sir M. Visvesvaraya Lifetime Achievement Award for Senior Scientists by the Govt. of Karnataka for lifetime contributions to the development of science and technology for the year 2016 (iii) Resource Faculty, International Summer School in Epilepsy organized by ILAE & ASEPA, Banjarmasin, Indonesia, 12-13 August 2016 (iv) Chairman, Technical Evaluation Committee (TEC) for Mental Health, Stroke and Neurological Disorders, Department of Health Research (DHR), Govt. of India (v) Principal Coordinator, nationwide trial of clozabam for refractory epilepsy, Mumbai, 22 January 2017 (vi) Member (a) Board of Management, MGM Institute of Health Sciences, Navi Mumbai (b) Scientific Advisory Group (SAG), Division of Non Communicable Disease, ICMR, New Delhi (c) Task Force, Indian Council for Medical Research (ICMR) (d) Scientific Advisory Committee, National Centre for Disease Informatics and Research, National Cancer Registry Programme, Department of Health Research, Ministry of Health and Family Welfare, Govt. of India (e) National Advisory Board, JAPI (f) Indian Council for Cultural Relations (ICCR), New Delhi (g) Advisory Committee, Bhopal Memorial Hospital and Research Centre, Bhopal (h) National Advisory Group, Ministry of Health and Family Welfare, Govt. of India, New Delhi (i) MGM Journal of Medical Sciences, MGM Institute of Health Sciences, Navi Mumbai (j) Genetics Commission, International League Against Epilepsy, (ILAE) USA (k) Special Expert Committee, DHR, Govt. of India (l) Scientific Advisory Committee, Partnership Programme established by DBT, New Delhi for Advanced Research in Biological Science & Engineering, Department of Biological Sciences (DBS), IISc, Bengaluru (m) National Think Tank (India Backbone Implementation Network – IBIN)- Planning Commission, Govt. of India (Secretariat, Bengaluru Baptist Hospital) (n) Institute Body and Standing Finance Committee, All India Institute of Medical Sciences (AIIMS) Bhubaneswar (o) Editorial Board, International Journal of Epilepsy (IJEP) (p) Governing Body, JSS Medical College, Mysore (q) Institute Body, Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh (r) Advisory Group on scaling up mental health services, supported by World Health Organisation and World Bank (s) Co-Chairman, Screening Committee, Initiative of Neuroclinical Research Education (INCRE), Department of Biotechnology, Govt. of India (t) Chairman, Academic Committee, AIIMS, Bhubaneswar (u) Founder Member, Brain Research Centre, Indian Institute of Science, Bengaluru.

Dr. Veerendrakumar M, Professor, Member, Expert Group on Operational Guidelines for Acute Stroke Care in the Country, Ministry of Health and Family Welfare, Govt. of India.

Dr. Chandra SR, Professor, (i) represented the Institute to receive the prestigious Vayoshreshtha Samman National Award from the Hon’ble President of India, at a function organized by the Ministry of Social Justice & Empowerment, Govt. of India, New Delhi, 1 October 2016 (ii) Guest of Honour, 6th Anniversary Celebration of Music School, Sree Gokulam Bengaluru, 25 December 2016 (iii) Reviewer (a) Journal of Neuroimmunology and Neuroinflammation (b) Archives of Gerontology and Geriatrics.

Dr. Nalini A, Professor, awarded Fellow of Indian Academy of Neurology, 2016.

Dr. Sanjib Sinha, Professor, Member, Doctoral Advisory Committee, Manipal Institute of Technology, Manipal, 17 November 2016.

Dr. Suvarna Alladi, Professor, (i) received Gandhi International Scholar Award by House of Lords London, UK on 4 July 2016 (ii) Research on bilingualism and cognitive reserve featured in ‘Discovery’ program of BBC world service channel (iii) Section Editor, Dementia and Cognitive Disorders: Indian Academy of Neurology Textbook and Handbook of Neurology (vi) Executive Member, Association of Cognitive Science, 2016 (v) Vice President, World Federation of Neurology Research Group on Aphasia, Dementia and Cognitive Disorders (vi) Editor, Special Issue on Medicolegal Issues in Neurology, Annals of Indian Academy of Neurology, 2016.

Dr. Girish Baburao Kulkarni, Additional Professor, (i) Member (a) National Academy of Medical Sciences (MNAMS), New Delhi (b) Central Team constituted by NCDC to visit Assam to study the reported increase in the number of deaths due to JE/AES in affected areas (iii) received ICMR International fellowship Award 2016-17.

Dr. Ravi Yadav, Additional Professor, received MDSI Best Paper award, ‘Genetic analysis of the glucocerebrosidase gene in south Indian patients with Parkinson’s disease’. 2nd Annual Conference of the Movement Disorders Society of India (MDSICON 2017), NIMHANS Bengaluru, 6-8 January 2017.

Dr. Seena Vengalil, Assistant Professor (on contract), received the Best Paper award, 13th International Congress of Neuromuscular Disorders, Toronto, 5-7 July 2016.
Dr. Shwetha Chiplunkar, PhD Scholar, received the Best Poster award, TS Srinivasan NIMHANS Knowledge Conclave NIMHANS, Bengaluru, 23–25 February 2017.

Dr. Abhishek Lenka, PhD Scholar, received (i) travel bursary from International Parkinson's Disease and Movement disorders society to attend Meeting on James Parkinson – An Essay on the Shaking Palsy 1817: A Celebration of 200 Years of Progress in London, UK, 10–11 March 2017 (ii) 2nd prize for platform (paper) presentation, 2nd Annual Conference of the Movement Disorders Society of India (MDSICON 2017), NIMHANS Bengaluru, 6–8 January 2017.

**Neuromicrobiology**

Dr. Shripad A Patil, Professor and Head (i) Vice-President, Indian Immunology Society (ii) chaired scientific and award sessions, National Immunology Meeting, GITAM University, Visakhapatnam, 16–18 February 2017.

Dr. Ravikumar R, Professor, (i) NABL surveillance/assessment (a) State Reference Laboratory, Dept. of Microbiology, TD Medical College, Alappuzha, 9 May 2016 (b) YRG CARE, Voluntary Health Services, Chennai, 30–31 July 2016 (c) Dept. of Microbiology, Govt. Medical College, Thiruvananthapuram, 20 August 2016 (d) Division of Laboratory Medicine and Molecular Diagnostics, RGCB, Thiruvananthapuram, 10–11 September 2016 (e) Molecular Medicine, Reliance Life Sciences Pvt. Ltd., Navi Mumbai, 22–23 October 2016 (ii) conducted MCI inspection, Integral Institute of Medical Sciences and Research, Lucknow, 30 August 2016.

**Neuropathology**

Dr. Vani Santosh, Professor and Head, (i) delivered (a) Tamil Nadu-Puducherry Oration, 65th Annual Conference of Pathologists and Microbiologists, Jaipur, December 2016 (b) Presidential Oration, 7th Annual Conference of Karnataka Neurosciences Academy, Bagalkot, January 2017 (ii) contributed to a chapter in WHO classification of CNS Tumors, update 4th Edition (iii) President (a) Indian Society of Neuro-Oncology (b) Karnataka Neuroscience Academy (iv) Treasurer, Neuropathology Society of India (v) Member (a) Institutional Committee for Stem Cell Research (IC-SCR), IISc, Bengaluru (b) VGST, Govt. of Karnataka (c) Board of Studies, SCTIMS, Kerala.

Dr. Anita Mahadevan, Additional Professor, (i) DBT Nominee, Institutional Biosafety Committee, Institute of Bioinformatics, Bengaluru (ii) Member, DBT NeuroTask Force.

Dr. Shilpa Rao, DM Student, Ms. Vidya Nimbalkar, PhD Scholar, Dr. Rajeswari RT, PDF, received ISNO Travel award, for paper presentation, 9th Annual Conference of the Indian Society of Neurooncology, NIMHANS, Bengaluru, 10–12 March 2017.

**Neurophysiology**

Dr. Shilpa Rao receiving the award at ISNOCON 2017, Bengaluru

Dr. Dr. Pooja Chavali, PDF, received Best Poster award, ‘Morphological spectrum of supratentorial anaplastic ependymomas – the great masquerade’, 9th Annual Conference of the Indian Society of Neurooncology, NIMHANS, Bengaluru, 10–12 March 2017.


Dr. Bindu M Kutty, Professor and Head, receiving ‘Academic Excellence Award’ by American Association of Physicians of Indian Origin - Sleep (AAPIOS) at the Annual Dinner Meeting, Colorado

Dr. Bindu M Kutty, Professor and Head, (i) honored with ‘Academic Excellence Award’ by American Association of Physicians of Indian Origin - Sleep (AAPIOS), Annual Dinner Meeting of AAPIOS, Denver, Colorado, 12 June 2016 (ii) General Secretary, ISSR (iii) Teaching Faculty, National Sleep Medicine Course (iv) Adjunct Faculty, NIAS (v) Member (a) Translational Neuroscience Committee, ICMR (b) PDF Expert Committee, Cognitive Science Research Initiative (CSRI-PDF) (c) Indian Sleep Medicine Board.
Dr. Raju TR, Sr. Professor, (i) honored for his outstanding contributions to the field of neuroscience, 34th Annual Meeting of Indian Academy of Neurosciences, NBRC, Manesar, 19-21 October 2016 (ii) His name is mentioned in the biography of Dr. APJ Abdul Kalam titled ‘Indian Above All: A.P.J. Abdul Kalam, A Life’ by Arun Tiwari

(iii) Chairman, Institutional Ethics Committee, NCBS, Bengaluru and Instem, Bengaluru (iv) President, SFN and IAN Bangalore Chapters (v) Reviewer, DBT projects (vi) Member (a) Society for Neuroscience, Global Membership Committee Meeting and International Chapters Workshop of SN, San Diego, USA, 12-16 November 2016 (b) Ethics Committee, Shankara Eye Hospital Whitefield, Bengaluru (c) Expert Panel, selection of Awardees for Biju Patnaik Award for Scientific Excellence and Samanta Chandra Sekhar Award, Odisha Bigyan Academy, Govt. of Odisha, 19-20 November 2016 (d) Global Membership Committee of Society for Neurosciences (SFN) (e) Expert member, ICMR for Neurology and Physiology.

Dr. Sathyaprabha TN, Professor, (i) Chairperson (a) Scientific Advisory Committee – Jindal Nature Cure Hospital (ii) Member (a) Scientific Advisory Committee of National Institute of Unani Medicine (b) Editorial Board, Acta Scand Neuralgia, Indian Journal of Surgical Oncology (c) Project Evaluation Committee – AYUSH, DST, Ministry of Health & Family Welfare, Govt. of India.

Dr. Shankaranarayana Rao BS, Professor, (i) received Prof. S.B. Deshpande Award in Neurophysiology by the Association of Physiologists of India for the outstanding contributions and excellence in the field of Neurophysiology, 15 September 2016 (ii) Member (a) Expert Committee, Developmental Brain Disorders Program, Govt. of Kerala (b) Advisory Committee, Ministry of Communications and Information Technology, Govt. of India (c) Institutional Human Ethics Committee, Institute of Trans-disciplinary Health Sciences and Technology, Bengaluru (d) Planning Committee, DST-SERB Neuroscience Schools, Department of Science and Technology, Govt. of India (e) The Indian National Node for NeuroInformatics (f) Technical Expert Committee for the purchase of equipment for Centre for Department of Zoology, Bangalore University, Bengaluru (g) National Advisory Board, Physiological Society of India (h) Expert Panel, Jossmayee Awards of Indian Academy of Neurosciences (iii) Secretary, Indian Academy of Neurosciences - Bangalore Branch (iv) Treasurer, Society for Neuroscience - Bangalore Chapter (v) chaired symposia on (a) Neurological diseases – causes and corrections (b) Neurodegeneration and toxicity (vi) Chairperson, Budding Scientists Forum and panel discussion, International Conference on Growth, Senescence and Mortality of Neurons: From traditional medicine to cutting edge technology (Neurocon - 2017), ICARE Institute of Medical Science and Research (IIMSAR), Haldia, West Bengal, 19-22 January 2017 (vii) Reviewer, IUSSTF-SERB, CSIR, ICMR, DBT, DRDO, BRNS and DST projects (viii) Reviewer, (a) Current Alzheimer Research (b) Psychoneuroendocrinology (c) Neuroscience (d) Pharmacological Research (e) Hippocampus (f) Biogerontology (g) Pharmaceutical Biology (h) Journal of Neuroscience Research (i) Neurochemistry International (j) Brain Research (k) Neurochemical Research (l) Journal of Neuropsychopharmacology (m) Molecular Brain Research (n) European Journal of Neuroscience (o) Stress (p) Neuropearmacology (q) Molecular Cellular Biochemistry (r) Pharmacology and Pharmacy (s) Neurobiology of Learning and Memory (t) The International Journal of Neuropsychopharmacology (u) Science Reports (v) BMC Neuroscience (w) Neural Regeneration Research (x) Metabolic Brain Disease (y) Metabolic Brain Disease (z) Archives of Neuroscience (ix) Editorial Board Member (a) Metabolic Brain Disease (b) Journal of Natural Science, Biology and Medicine (c) International Journal of Modern and Alternative Medicine Research (d) Journal of Krishna Institute of Medical Sciences University (e) Bioinfo Publications (f) Journal of Pharmaceutical and Biological Sciences (g) Trends in Biotechnology Research (h) Science Discovery (i) International Journal of Molecular Biology and Biochemistry (j) Journal of Cell and Tissue Research (k) Executive Editor, Neuroscience Research Letters (l) Editor, Prudence Journal of Medicine and Medical Sciences (m) Editor-in-Chief (a) The ASSOPI Journal

Dr. Shankaranarayana Rao BS, Professor, receiving Prof. S.B. Deshpande Award by the Association of Physiologists of India for outstanding contributions and excellence in the field of Neurophysiology
of Physiology (xiii) Associate Editor, Journals of Brain, Mind and Consciousness (b) Journal of The Association of Physiologists of India (xvi) Associate Editor, Brain, Mind and Consciousness Journal.

Dr. Laxmi T Rao, Additional Professor, Member (a) Life Science Research Board (LSRB), DRDO, New Delhi, 2015-2017 (b) University Grant Commission (UGC) Advisory Committee, Center with Potential for Excellence in a Particular Area (CPEPA), University of Calcutta (c) Member, Life Science Research Board (LSRB)-DRDO, New Delhi (d) Editorial Advisory Board to Annals of Neuroscience, Karger Publications (e) Open Access Journal of Sleep Disorders and Therapy.

Dr. Srikumar BN, Assistant Professor, (i) Member, Data Safety and Monitoring Board (DSMB) for a Multicentric Ayurveda Clinical Trial by National Ayurveda Dietetics Research Institute (NADRI), Bengaluru (ii) Expert-Referee, Science and Engineering Research Board, DST, Government of India.

Dr. Phalguni Anand Alladi, Sr. Scientific Officer, received (a) Prof. Surinder Mohan Marwah Award in Geriatrics-2014 by Indian Council of Medical Research, November 2016 (b) Movement Disorders Society Travel Award to attend the 20th International Movement Disorders Congress, Berlin, Germany, 19-23 June 2016.

Mr. Sunil Jamuna Tripathi, PhD Scholar, received Best Oral Presentation award, ‘Restoration of prefrontal cortical functions by selective inactivation of basolateral amygdala during stress: a possible involvement of astroglial plasticity’, International Conference on Growth, Senescence and Mortality of Neurons: From Traditional Medicine to Cutting Edge Technology, NEUROCON-2017, West Bengal, 19-22 January 2017.

Ms. Suwarna Chakraborty, PhD Scholar, received (a) Best Panellist award, International Conference on Growth, Senescence and Mortality of Neurons: From Traditional Medicine to Cutting Edge Technology, NEUROCON-2017, West Bengal, 19-22 January 2017 (b) Best Poster award, ‘Chronic N-Acetyl cysteine treatment restores depression–induced spatial learning deficits and structural changes in the hippocampus and amygdale’, 34th Annual Conference of Indian Academy of Neurosciences – Molecules to mind. National Brain Research Centre, Manesar, 18-21 October 2016.


Mr. Abhilash PL, PhD Scholar, received Best Poster Presentation award, IBRO-APRC School, Panjab University, 14-22 December 2016.

Ms. Rukmani MR, PhD Scholar, received 1st Prize, platform presentation, 2nd Annual Conference of Movement Disorder Society of India: MDSICON 2017, NIMHANS, Bengaluru, 6-8 January 2017.

Mr. Subhadeep Dutta Gupta, MPhil Scholar, received Budding Scientist Award for oral presentation, ‘When the lights turn off: Short photoperiod regime reduces ventral subicular lesion-induced anxiety-like behavior in Wistar rats’, International Conference on Growth, Senescence and Mortality of Neurons: From Traditional Medicine to Cutting Edge Technology, NEUROCON-2017, West Bengal, 19-22 January 2017.

Dr. Malla Bhaskara Rao, Professor and Head, (i) Member (a) Executive Committee, Neurological Society of India (NSI) (b) Executive Committee, Indian Epilepsy Society (IES) (ii) Secretary, Indian Society for Stereotactic and Functional Neurosurgery (ISSFN).

Dr. Indira Devi B, Professor, (i) Co-chairperson, World Federation of Neurosurgical Societies (WFNS) Committee for Peripheral Nerve Surgery (ii) Executive Member, Indian Society of Peripheral Nerve Surgery (ISPNS).

Dr. Dhananjay Bhat I, Professor, Faculty, 9th NSI Educational Course, Mumbai, January 2016.

Dr. Dwarakanath D, Professor, Executive Committee Member (a) Indian Society of Pediatric Neurosurgery (INDSPN) (b) Indian Society of Stereotactic and Functional Neurosurgery (ISSFN).

Dr. Dhaval Shukla, Professor, (i) Member, Task Force, guidelines for management of traumatic brain injury (ii) Associate Editor, Indian Journal of Neurotrauma (iii) Executive Member, Skull Base Surgery Society of India (SBSSI).

Dr. Arivazhagan A, Additional Professor, (i) Executive Committee Member, Skull Base Surgery Society of India (SBSSI) (ii) Member, Neuroendoscopy Society (India).

Dr. Vikas V, Associate Professor, Member, Election Commission, Karnataka State Board, IMA.


Dr. Kislay Kishore, Sr. Resident, receiving Best Paper Award, platform presentation, at the Joint Conference of AASPN and INDSPN, Mumbai


Dr. Harsh Deora, Sr. Resident, received Torrent Young Scholar Award (in Neurosurgery), Torrent Pharma 5th Academic Fest, Ahmedabad, October 2016.

Dr. Mayur V Kaku, Sr. Resident, received KK Bisaria Best Paper Award for ‘Role of diffusion tensor imaging in evaluation of gliomas involving eloquent areas of brain’, NSICon-2016, Chennai, 15-18 December 2016.

Dr. Vinayak Narayan, Sr. Resident, received the Best Paper award, NSICon-2016, Chennai, 15-18 December 2016.
Neurovirology

Dr. Anita Desai, Professor and Head, (i) nominated by Govt. of India to attend the meeting to support scale-up of viral load testing through optimizing the existing capacity, Bangkok, Thailand, 30 May-1 June 2016 (ii) WHO consultant (a) to provide support for ZIKA virus surveillance, Maldives, 3-19 August 2016 (b) to provide technical support for establishing a virology laboratory, extending training to the laboratory staff in virology techniques and management, Royal Centre for Disease Control, Thimphu, Bhutan, 5-9 September 2016 (iii) Member (a) Expert Committee on Communicable Diseases for Fellowships, Indian Council of Medical Research (b) Technical Resource Groups / Committees on Early Infant Diagnosis, Viral Load, National AIDS Control Organization.

Nursing

Dr. Ramachandra, Professor and Head, received the prestigious National Florence Nightingale Award from the Hon’ble President of India Shri. Pranab Mukherjee on the occasion of International Nurses Day, Rashtrapati Bhavan, New Delhi, 12 May 2016, for his distinguished service.

Dr. Lalitha K, Professor, invited to attend the Doctoral Committee Meeting, IGNOU, New Delhi, 11 August 2016.

Dr. Sairam Gandhi, Additional Professor, (i) chaired (a) two sessions, Psychiatric-Mental Health Nursing International Conference, London, UK, 3-4 October 2016 (b) session on ‘Disaster risk reduction – Role of health care providers’, International Conference, College of Nursing, CMC, Vellore, 17-18 November 2016 (c) session on ‘The Ergonomics of employment in persons with mental illness: Lessons for the Indian Context’, International Conference on Contemporary Trends in Clinical Psychology: Training, Research and Practice, NIMHANS, Bengaluru, 17-19 November 2016 (ii) Invited judge, poster presentations and Sarala Kapoor Award for oral presentations, 3rd International Conference of Indian Society of Psychiatry Nurses, NIMHANS, Bengaluru, 10-12 February 2017 (iii) Chief Guest, Lamp Lighting Ceremony, Sri Devraj Urs College and School of Nursing, Kolar, 3 March 2017 (iv) Member (a) PhD Research Advisory Committee (RAC), Sri Ramachandra University, Chennai, 18 July 2016 (b) Trained Nurses Association of India (c) Indian Society of Psychiatric Nurses (d) CMC College of Nursing Alumni Association (e) WAPR and Sigma Theta Tau Honor Society of Nursing (f) BOS, M.Sc. in Psychiatric Nursing course, LGBRIMH, Tezpur, Assam (g) Editorial Board, Journal of Psychosocial Rehabilitation and Mental Health (h) Editorial Board, International Journal of Advanced Nursing Science and Practice (open access) (i) Editorial Advisory Committee, Indian Journal of Continuing Nursing Education (v) Consultation service to National Commission for Women (NCW) as co-investigator of the project about the rehabilitation phase for women with mental illness in psychiatry hospitals in India, NCW office, New Delhi, 6 September 2016 (vi) participated in interactive discussions about clinical services, academics and research with administrative heads and faculty of Stony Brook School of Nursing, USA, 19-22 October 2016 (vii) Visiting faculty, Nursing Research Methodology, LGBRIMH, Tezpur, Assam, 19-20 January 2017 (viii) Specialty Field Editor, Indian Journal of Psychiatric Nursing.

Dr. Radhakrishnan G, Assistant Professor, (i) Member (a) National Editorial Board, International Journal of Nursing Education (b) Governing Council, PD Bharatesh College of Nursing, Belgaum (c) PhD Examination Panel, NITTE University (d) PhD Examination Panel, University of Kerala, Trivandum (e) PhD Examination Panel, Dr. MGR Medical University, Chennai (f) Executive Committee, ‘Rehabilitation of persons with mental illness: Nursing Perspectives’, International Conference of Indian Society of Psychiatric Nurses, NIMHANS, Bengaluru, 10-12 February 2017 (ii) Specialty Field Editor, ISPN- Indian Journal of Psychiatric Nurses (iii) Secretary, Indian Society of Psychiatric Nurses (ISPN).


Ms. Shyamala, Staff Nurse (Paediatric Neurology Ward, Neuro Centre), received Best Nurse Award, International Nurses Day 2016, NIMHANS, Bengaluru, 11 May 2016.

Ms. KO Mary, Staff Nurse (Psychiatry Ward), received Best Nurse Award, International Nurses Day 2016, NIMHANS, Bengaluru, 11 May 2016.

Ms. M Jaya, Staff Nurse (Casualty Block), received Best Nurse Award, International Nurses Day 2016, NIMHANS, Bengaluru, 11 May 2016.

College of Nursing

Dr. BV Kathyayani, Principal (i) Chief Guest (a) International Nurses Day celebrations programme, ESIC Model Hospital, Rajajinagar, Bengaluru, 28 May 2016 (b) International Women’s Day, Dr. M.V. Shetty College of Medical Lab Technology, Mangalore, 8 March 2017 (ii) Member (a) BOS (b) Editorial Board, Texila American University.

Dr. Pratibha Swamy, Associate Professor, Member (a) British Medical Journal Group, London (b) Editorial Board, Journals Puh, New Delhi.

Dr. Valliammal S, Lecturer, (i) received ‘Best Moderator’ award, scientific paper oral presentation, 5th International Conference on Pediatric Nursing and Healthcare, Cologne, Germany, 12 July 2016 (ii) Associate Editor, Nursing & Health Care International Journal (iii) Reviewer (a) International Journal of Nursing Didactics (b) International Journal of Nursing and Midwifery (b) Journal of Medical Bio-medical and Applied Sciences (c) RGUHS Journal of Nursing Sciences (d) Innovative Journal of Medical and Health Sciences (iv) External Expert, Doctoral Committee/Advisory Committee, Sri Devaraj Urs Academy of Higher Education and Research, Kolar (v) Member, Ethics Committee, PhD Nursing, Adhiparasakthi College of Nursing, Kanchipuram, Tamil Nadu.


Physiotherapy Centre

Dr. Pradnya Dhargave, Chief Physiotherapist, awarded IFCN Fellowship from North American Chapter of International Federation of Clinical Neurophysiology to attend an International Conference, 2016.

Psychiatry

NIMHANS-Psychiatric Rehabilitation Services won National Award for the Empowerment of Persons with Disabilities 2016 under the category of ‘Best Institution—An Organisation Providing Holistic and Comprehensive Services to the Persons with Disabilities in a Comprehensive Manner’. The award was received by Prof. SK Chaturvedi, Head of Psychiatric Rehabilitation Services from the Hon’ble President of India Shri. Pranab Mukherjee at a function held in New Delhi on 3 December 2016.

NIMHANS bagged the Vayoshreshtha Samman-2016 National Award under the category “Best Institution for Research in the Field of Ageing” in recognition of the service towards the cause of elderly persons, especially indigent senior citizens at a function organized by the Ministry of Social Justice & Empowerment, Government of India, New Delhi on 1 October 2016. Hon’ble President of India Shri. Pranab Mukherjee presented the prestigious award to the representatives of NIMHANS.
Express Public Health Award

The Express Public Health Awards, in its second edition, honoured state governments, public sector institutes, government hospitals and NGOs for their exemplary efforts to achieve UN’s Sustainable Development Goals (SDG) related to health. NIMHANS bagged Express Public Health Award under the ‘Most Efficiently Run Health Programme by a Government Institution’ category (for hub-and-spoke model across the country comprising community health professionals, NGOs, GPs, non-specialists and lay counsellors).

Virtual Knowledge Network (VKN) NIMHANS ECHO team was chosen to deliver a presentation on ‘Development and implementation of telementoring network for skilled capacity building and quality care in addiction and mental health: Virtual NIMHANS’ at the National Summit on Good and Replicable Practices and Innovations in Public Healthcare Systems, Tirupati, Andhra Pradesh, organised by National Health Mission, Ministry of Health and Family Welfare, Government of India, 29-31 August 2016.

Dr. Prabhat K Chand, Additional Professor, and Coordinator, Virtual Knowledge Network (VKN) NIMHANS ECHO delivering a presentation at the National Summit on Good and Replicable Practices and Innovations in Public Healthcare Systems

Dr. Prabha S Chandra, Professor and Head, (i) Best paper award, 2nd prize, ‘Development of TAPP- Tool to Assess Parenting in Psychiatric Disorders’, ICONS-2016, Chennai (ii) Chairperson, Perinatal Psychiatry Specialty Section, Indian Psychiatric Society (iii) Elected Secretary, International Association of Women’s Mental Health (iv) Member, Publications Committee, World Psychiatric Association (v) Executive Member, Marce Society for Perinatal Psychiatry (vi) Section Editor, Perinatal Mental Health, Archives of Women Mental Health.

Dr. Sanjeev Jain, Professor, Member, Editorial Board, International Journal of Mental Health Systems (IJMHS).

Dr. Pratima Murthy, Professor, (i) Chairperson, Indian Psychiatric Society group on Substance Use Disorders, May 2016 (ii) International Consultant, WHO/ITU programme on Cessation for Tobacco (iii) Member, International Expert Group to develop document on ‘Be Healthy Be Mobile’, a handbook on how to implement tobacco cessation, World Health Organisation (WHO) and International Telecommunications Union, 2016 (iv) attended DGHS meeting to finalize a broad policy statement for improving mental health services in the country, Nirman Bhavan, New Delhi, 6 May 2016.

Dr. Vivek Benegal, Professor, Member (a) Steering Committee on Alcohol Control and Health, Ministry of Health and family Welfare, Govt. of India (b) Expert Group, Committee on National Alcohol Prevention/Control Policy, Ministry of Social Justice and Empowerment, Govt. of India, 2016 (c) State Level Co-Ordination Committee on NDPS Act, Ministry of Home, Govt. of Karnataka.

Dr. Jagadisha Thirthalli, Professor, (i) received the Vimla Virmani Award of the National Academy of Medical Sciences (NAMS), Raipur, Chhattisgarh, 22 October 2016 (ii) Vice-Chairman, Research, Education and Training Foundation Subcommittee, Indian Psychiatric Society (iii) attended (a) DGHS meeting to finalize a broad policy statement for improving mental health services in the country, Nirman Bhavan, New Delhi, 6 May 2016 (b) meeting of Expert Committee on Section 38 of RPWD Act 2016, 15 March 2016 (b) sub-committee meeting on certification and assessment of disabilities for the RPWD Act 2016, 10 March 2016.

Dr. Senthil Kumar Reddi V, Additional Professor, Post-Doctoral Fellowship in ‘Functional Imaging for Psychiatric and Behavioral disorders’, awarded under Fogarty International Center Fellowship of Department of Epidemiology, University of Florida, United States of America, April - July 2016.

Dr. Shivarama Varambally Additional Professor, Distinguished Speaker, oration on ‘Yoga for Psychosis: Calming the fire within’, Indo-Canadian Psychiatric Association (ICPA) Meeting, Toronto, Canada, 23 September 2016.

Dr. Naren P. Rao, Associate Professor, honoured with ‘Innovative Young Biotechnologist Award’ for the year 2015 by the Department of Biotechnology, Ministry of Science & Technology, Govt. of India, New Delhi, June 2016.
Dr. Krishna Prasad M, Associate Professor, (i) attended the State Mental Health Systems Assessment Consensus Meeting of NMHS for the state of Madhya Pradesh, AIIMS, Bhopal, 27 May 2016 (ii) Member, Expert Panel, validation of World Health Organization’s (WHO) International Classification of Functioning, Disability and Health (ICF) Core Set for Schizophrenia, University of Barcelona.

Dr. Sivakumar T, Associate Professor, (i) attending meetings of Department of Disabled and Senior Citizens, Govt. of Karnataka on identification of posts to be reserved for persons with disabilities (mental illness and mental retardation) (ii) Member (a) Local Editorial Board and Associate Editor, Journal of Psychosocial Rehabilitation and Mental Health (b) Expert Committee, Focus Group discussion on ‘Perceptions, attitudes and experiences regarding sexuality of people with severe mental illness’, Richmond Fellowship Society, Bengaluru, 3 August 2016 (iii) Coopted member, local level committee, Bengaluru urban for issuing guardianship under National Trust Act 1999 (iv) Attended program conducted by National Commission for Women, as part of NIMHANS team, 6 September 2016 (v) Committee Member, Training and Research Centre, Richmond Fellowship Society (India), Bengaluru Branch.

Dr. Hareesh Angothu, Assistant Professor, (i) attending meetings of Department of Disabled and Senior Citizens, Govt. of Karnataka on identification of posts to be reserved for persons with disabilities (mental illness and mental retardation) (ii) Member, Expert Panel, validation of World Health Organization’s (WHO) International Classification of Functioning, Disability and Health (ICF) Core Set for Schizophrenia, University of Barcelona.

Dr. Manjunatha N, Assistant Professor and Dr. Preeti Pansari, Sr. Resident, received Best Oral Paper award, ‘Socio-demographic profile and baseline clinical parameters of patients admitted at Sakalawara Residential Services’, Indian Psychiatric Society – Karnataka Chapter (KANCIPS), Mysuru, 25 September 2016.

Dr. Soumitra Das, Sr. Resident, received 1st Prize, Murugappan Award Session, Annual National Conference Indian Psychiatric Society (ANCIPS), Raipur, 5-8 January 2017.

Dr. Seeraj VS, Sr. Resident, International Travel Grant Award-2017 from Indian Council of Medical Research for participating in 2nd International Brain Stimulation Conference, Barcelona, Spain, 5-8 March 2017.

Dr. Bharathram SR, Jr. Resident, (i) awarded, ‘Travel Grant for Non-ICMR Scientist-2016’ by the Indian Council of Medical Research to attend the World Congress of Psychiatry Genetics-2016 in Jerusalem, Israel (ii) received ‘Torrent Young Scholar Award (in Psychiatry)’, Torrent Pharma 5th Academic Fest, Ahmedabad, October 2016.


Dr. K Sekar, Professor and Registrar, NIMHANS received (i) WAPR-IC 2016 Award for Excellence in Psychosocial Rehabilitation (ii) Golden Jubilee Year Prof. Rajeshwar Prasad Memorial Award for Professional Social Work/Social Work Action and Social Administration Policy, ISSA, Banaras Hindu University, Varanasi, February 2017.


Dr. Krishna Reddy, Additional Professor, Member (a) BOS, Kuvempu University, Shivamogga (b) BOS, Gulbarga University, Gulbarga (c) BOS, Sri Krishnadevaraya University, Andhra Pradesh.


Dr. Ameer Hamza, Additional Professor, (i) Member (a) Institutional Ethics Committee for Bio-Medical Research, National Institute of Unani Medicine, Bengaluru (b) Editorial Board, Austin Journal of Psychiatry and Behavioral Sciences (ii) Vice-president, Indian Society of Professional Social Work (ISPSW).
Dr. Janardhana N, Additional Professor, (i) invited to draft a module on Development of Rights Based Child Development (in Kannada), Center for Child and the Law, National Law School, Bengaluru (ii) Advisory Member, Committee to develop model home (for girls), as per the Juvenile Justice (Care & Protection of Children) Act 2015, Dept. of Women and Child Development, Govt. of Karnataka (iii) invited to provide technical support for training and capacity building training programme for the personnel working in child care institutions, Andhra Pradesh Integrated Child Protection Society and Legal Aid, Govt. of Andhra Pradesh (iv) Member, Committee for development of curriculum for postgraduate diploma and certificate course in child development, UNICEF, Bengaluru (v) Resource Person, Empowerment of Differently Abled and Senior Citizen Podium, Directorate of the Welfare of Disabled, Govt. of Karnataka (vi) invited to a round table meeting to discuss care and protection issues of children in the states of South India, State Commission for Protection of Child Rights (vii) Honorary Treasurer, Indian Society of Professional Social Work (ISPSW).

Dr. Vranda MN, Associate Professor, (i) expert member, National Consultation Meeting (to disseminate the report of needs assessment of long stay women in mental hospitals with different stakeholders), National Commission for Women, New Delhi, 6 September 2016 (ii) invited as expert (a) to provide inputs for the Government of Karnataka's initiative on 'Developing and implementing Life Skills Training and Counselling Services for Youth through NSS (National Service Scheme) Coordinators in Karnataka', Department of Epidemiology, NIMHANS, 10-11 November 2016 (b) to share experience of ‘AWAKE Clinic of NIMHANS', National Consultation on Effective Intervention and Communication Strategies to Counter Violence Against Women, WISCOMP - Women in Security, Conflict Management and Peace Foundation for Universal Responsibility of His Holiness the Dalai Lama, New Delhi, 28-30 November 2016 (c) to a meeting on life skills under the Chairmanship of Principal Secretary to Government, Education Department (Primary and Secondary Education), Vikasa Soudha, 20 December 2016.

Dr. Aravind Raj E, Associate Professor, (i) Panelist, discussion on mental health and psychosocial care for disaster affected in a session on health care responses in disaster, All India Conference on Health and Wellbeing: Community as Solution, CARITAS India, New Delhi (ii) Chaired a scientific session, 35th Annual National Conference of Indian Society of Professional Social Work Department of Psychiatry, Government Medical College Hospital, Chandigarh, 9-11 February 2017.

Dr. Aarti Jagannathan, Assistant Professor, (i) Member (a) Expert Panel, validation of World Health Organization’s (WHO) International Classification of Functioning, Disability and Health (ICF) Core Set for Schizophrenia, University of Barcelona (b) House Committee and Admission Committee, Asha House, Richmond Fellowship Society (India), Bengaluru (c) Training and Research Centre Committee, Richmond Fellowship Society (India), Bengaluru Branch (d) Expert Committee, Focus Group discussion on ‘Perceptions, Attitudes and Experiences regarding sexuality of people with severe mental illness’, Richmond Fellowship Society, Bengaluru, 3 August 2016 (e) Editorial Committee, Samatvam – a quarterly Yoga newsletter, NIMHANS (f) Editorial Board, Austin Journal of Psychiatry and Behavioral Sciences (g) Editorial Board, Journal of Disability Studies (h) PhD Interview Committee, S-VYASA University, Bengaluru (ii) Co-opted Committee Member for meetings on job reservation for PWD by the Directorate of Empowerment of Disability and Senior Citizens, Govt. of Karnataka (iii) Collaboration with the Secretary, Ministry of Rural Development and Panchayat Raj, Govt. of Karnataka on Application of MGNREGA for Persons with Disabilities, 7 February 2017 (iv) attended the meeting of National Federation of Blind, on initiatives of NITI Ayog for the disabled, 4 March 2017 (v) Knowledge Expert, Task Force for creating Advisory Note for the different qualification packs (job roles) for Skill Council for Persons with Disability (SCPwD), National Skill Development Corporation (NSDC), New Delhi (vi) Preparation of proposal for skills empanelment to the Ministry of Social Justice and Empowerment, Govt. of India (vii) Networking with Tata Institute of Social Sciences (TISS), School of Social Work, and Disability Studies for exchange of learning, knowledge and projects (viii) Assistant Editor, Yoga Sudha – a monthly Yoga Magazine (ix) Editor, special issue on ‘Mental Health Promotion’, Austin Journal of Psychiatry and Behavioral Sciences (x) Coordinator, e-group with DMHP Staff, GOK for liaison and networking, as part of the TOT for DMHP staff, NIMHANS, Bengaluru, 13 July 2016.

Dr. Bino Thomas, Assistant Professor, two-day consultation on Social Norms and the Rights of Children and Women, UNICEF (Andhra Pradesh, Karantaka and Telengana Field Offices), The Capitol Hotel, Bengaluru, 23 March 2017.

Dr. Kanmani TR, Assistant Professor, received Best Paper Award, ‘Psychological distress and concerns of caregivers in emergency and trauma care center in Bengaluru’, 35th National Conference of Indian Society of Professional Social Work, Chandigarh, 9-11 February 2017.

Dr. Anish Cherian, Assistant Professor, awarded Public Health Research Initiative (PHRI) Fellowship, Public Health Foundation of India (PHFI) in collaboration with Science and Engineering Research Board (SERB).

Mr. Vinit Kumar Singh, PhD Scholar, received Dr. M. Chandrasekar Rao Memorial Award (best paper), ‘Parental bonding among individuals with anxiety disorder and healthy controls’, 35th Annual National Conference of ISPSW, Chandigarh, 9-11 February 2017.
Psychopharmacology

Dr. Chittaranjan Andrade, Professor and Head, Chairperson, Task Force on Psychopharmacology, Indian Psychiatric Society.

Speech Pathology & Audiology

Dr. Jayaram M, Sr. Professor and Head, (i) Chairman (a) Expert Group on Speech and Hearing, Rehabilitation Council of India (b) Equivalence Committee, Rehabilitation Council of India.


Dr. Vandana VP, Assistant Professor, Associate Editor, Journal of Indian Speech and Hearing Association.

Dr. Meera SS, Speech Therapist, Member, Advisory Committee, Latika Roy Foundation, Dehradun.

Transfusion Medicine & Haematology

Dr. Sundar Periyavan, Professor and Head, (i) awarded membership, National Academy of Medical Sciences (India), in recognition of significant contribution for the advancement of Medical Sciences (ii) a sapling was planted in his name/honour at Kadiri village in Andhra Pradesh in appreciation of participation as faculty, Joint Congress of American Association of Blood Banks (AABB) and Asian Association of Transfusion Medicine (AATM), Bengaluru, 10-11 December 2016 (iii) Chairperson, Technical Session, 5th Annual Conference of Indian Society of Transfusion Medicine, Bhopal, Madhya Pradesh, 18-20 November 2016.

Certificate of Appreciation: Transfusion Medicine Centre, NIMHANS was awarded a Certificate of Appreciation for outstanding efforts in organizing and conducting highest number of voluntary blood donation camps for the year 2015-16 on National Voluntary Blood Donation Day, 1 October 2016, by the Karnataka State AIDS Prevention Society and Karnataka State Blood Transfusion Council.

Guinness World Records: NIMHANS Blood Bank (Transfusion Medicine Centre) received a certificate of participation in the record event. The Rotary International District 3190 made it to the Guinness World Records with most people signing up to donate blood within eight hours at multiple venues. The Indian Red Cross Society (Karnataka state branch) and the Rotary TTK Blood Bank were the medical partners for the event held at Bengaluru on 4 August 2016.

Clinical Pathology Laboratory, Department of Transfusion Medicine & Haematology was awarded NABL accreditation in December 2016 (valid from 22 September 2016 to 21 September 2018).
Visitors to NIMHANS

Dr. MK Lalitha and Dr. Ranganathan Iyer, Assessors, NABL, visited the Dept. of Neurovirology for renewal of accreditation, 1-2 April 2016.

Dr. Dipshikha Chakravortty, Associate Professor, Centre for Infectious Diseases Research (CIDR), Department of Micro Biology and Cell Biology (MCB), Indian Institute of Science (IISc), Bengaluru visited the Dept. of Neurophysiology and delivered a lecture, ‘Needle-less drug delivery on vaccination using shockwave techniques’, 2 April 2016.

Dr. Jean-Jacques Rouby, Professor of Anaesthesiology and Critical Care Medicine & Director of Multidisciplinary Intensive Care Unit, University Pierre et Marie Curie, France visited the Dept. of Neuroanaesthesia and Neurocritical Care and delivered a guest lecture, ‘Neubulized antibiotics in the ICU’, 12 April 2016.

Ms. Antoinette Gupta, Marital and Family Therapist, California, USA, visited the Dept. of Clinical Psychology and delivered a lecture, ‘Attachment based couple and family therapy’, 26 April 2016.

Matthew Cooper, ITAD, UK, Lynette Lowndes, ITAD, UK, and Abdullah, UNICEF, New York visited the Dept. of Neurovirology, to review and discuss EID Programmes, 6 May 2016.

Dr. Ravindra Panth, Professor of Buddhist Philosophy and Director/Vice-Chancellor, Nava Nalanda Maha Vihara (Deemed University), Nalanda, Patna visited the Dept. of Neurophysiology and delivered a lecture, ‘Vipassana Meditation and its Relevance to Society’, 10 May 2016.

Dr. Sangram S. Sisodia, Thomas Reynolds Sr. Family Professor of Neurosciences, Professor, Departments of Neurobiology and Neurology & Director, Center for Molecular Neurobiology, The University of Chicago, USA, visited the Dept. of Neurology and delivered a lecture on ‘Molecular Neurobiology of Alzheimer’s Disease’, 18 May 2016.

Dr. Sivakumar Sambandan, Scientist, Schuman Lab, Max Planck Institute for Brain Research, Frankfurt am Main, Germany visited NIMHANS and delivered a lecture, ‘miRNAs and Regulation of Protein Synthesis in Neuronal Dendrites’, 27 May 2016.

Dr. Padmavati, Additional Director, Schizophrenia Research Foundation, Chennai, visited the Psychiatric Rehabilitation Services unit, 3 June 2016.

Shri. SK Gulati, Additional Chief Secretary to Govt. of Haryana Dept. of Social Justice and Empowerment, visited the Dept. of Psychiatry, 10 June 2016.


Prof. Andrew Pickles, Chair in Biostatistics, King’s College London, UK, visited the Dept. of Biostatistics and delivered a lecture, ‘Research opportunities for biostatistics in clinical research’, 28 June 2016.


Dr. Shalini Rajneeshe, Principal Secretary, Ministry of Health and Family Welfare, Government of Karnataka, visited the Psychiatric Rehabilitation Services unit, 2 July 2016.

Dr. Mukesh Dherani, University of Liverpool, London, visited the Dept. of Psychiatry, 4-9 July 2016.

Dr. Soumya Swaminathan, Director General, Indian Council for Medical Research (ICMR) & Secretary, Department of Health Research, Ministry of Health & Family Welfare, Govt. of India, Dr. Prasant Mathur, Director, National Centre for Diseases Informatics and Research (NCRP), and Dr. A. Nandakumar, Scientist, ICMR, Bengaluru, visited the Dept. of Psychiatry, 9 July 2016.
Dr. Martin J Brodie, Clinical and Research Director, Epilepsy Unit, Glasgow, Scotland, visited the Dept. of Neurology and delivered a lecture, ‘Rational use of conventional AEDs’, 13 July 2016.

Dr. S Vijaya, Professor, Department of Microbiology and Cell Biology, Indian Institute of Science (IISc), Bengaluru, and Dr. Shankar Pattabhiraman, Staff Scientist, Beckman Coulter Ltd., Bangalore Development Centre, visited the Dept. of Neuromicrobiology, 13 July 2016.

Dr. Kim Cornish and Dr. Shantha Rajaratnam, from Monash Institute of Cognitive and Clinical Neurosciences, Melbourne, Australia, visited the Dept. of Clinical Psychology, 14 July 2016.

Mr. Gautam Aggarwal, Member, National Federation of the Blind and Mr. KR Venkatesha, Karnataka Parents’ Association for Mentally Retarded Citizens (KPAMRC), visited the Psychiatric Rehabilitation Services unit, 16 July 2016.

Dr. Harsha Shanthanna, Assistant Professor, Department of Anaesthesiology, McMaster University, Hamilton, Canada & Program Director, Chronic Pain Fellowship, McMaster University, Chair, Special Interest Group-Interventional Pain, Canadian Pain Society Executive Board visited the Dept. of Neuroanaesthesia and Neurocritical Care and delivered a lecture, ‘Advances in Neuropain Management’, 19 July 2016.

Prof. Benoit G Bardy, EuroMov, University of Montpellier, France, visited the Dept. of Psychiatry, 27 July 2016.

Dr. Bruce Struminger, Associate Director, Project ECHO (Extension for Community Healthcare Outcomes), USA, and Dr. Sunil Anand, Executive Director, Project ECHO, New Delhi, visited the Dept. of Psychiatry, 29 July 2016.

Dr. Andrew Stanfield, Senior Clinical Research Fellow, Division of Psychiatry, University of Edinburgh, UK, visited the Dept. of Child and Adolescent Psychiatry and participated in a meeting held to discuss research collaborations, 27 July 2016.

Dr. Mark Sander and Dr. Karen Turner, from Parenting and Family Support Centre, School of Psychology, University of Queensland, Australia, visited the Dept. of Clinical Psychology and delivered a talk, ‘3 Ps Parenting Approach’, 9 August 2016.


Dr. Haim Belmaker, Professor of Psychiatry, Israel and President of the International Neuropsychiatric Association, visited the Dept. of Psychiatry, 11 August 2016.

Dr. Ellora Sen, Scientist V and Additional Professor, National Brain Research Centre (NBRC) Manesar, Haryana, visited the Dept. of Neurophysiology and delivered a lecture, ‘Dysregulated metabolism in glioblastoma: Involvement of telomerase’, 11 August 2016.

Ms. Claudia Lang, Medical Anthropologist, Munich, Germany, visited the NIMHANS Centre for Well Being (NCWB), 17 August 2016.

Dr. Sumi Jain, SPC (NCD), In-charge, National Mental Health Programme, Chhattisgarh, visited the Dept. of Psychiatry, 18 August 2016.

Dr. C Ramasubramanian, State Nodal Officer, Mental Health Programme, Tamil Nadu, visited the Psychiatric Rehabilitation Services unit and conducted ‘Swavlamban Health Insurance Camp’, 20 August 2016.

Prof. Hassan Meshkibaf, Professor and Head, Department of Biochemistry, Fasa University of Medical Sciences, Iran, visited the Dept. of Neurochemistry and delivered a lecture, ‘Metabolic profiling’, 24 August 2016.

Dr. George D Kiriyanthan, Albert-Ludwigs-University, Germany, visited the Dept. of Neurosurgery and delivered a lecture, ‘Avoidance of complications due to bleeding and insufficient dura sealing of neurosurgical procedures’, 26 August 2016.

Dr. David Mellor, Associate Dean (International), Faculty of Health/School of Psychology, Deakin University, Australia, visited the Dept. of Clinical Psychology, 30 August 2016.

Dr. RP Singh, Professor of Pali, Nava Nalanda Mahavihara, Patna, visited the Dept. of Neurophysiology and delivered a lecture, 30 August 2016.

Prof. Dinesh Bhugra, Psychiatrist, Professor of Mental Health and Diversity, Institute of Psychiatry, King’s College, London, UK visited the Dept. of Mental Health Education, 3 September 2016.

Ms. Sujitha Peter, Quality Consultant and Ms. Evonne Susma, Zonal Manager, Christian Medical Association of India, CDC-NACO QMS-BB Project, visited the Dept. of Transfusion Medicine & Haematology, (i) 4-5 September and (ii) 5-6 December 2016.

Dr. Madhumita Puri, Executive Director, Society for Child Development, New Delhi, visited the Psychiatric Rehabilitation Services unit, and delivered a lecture, ‘Green skilling project: empowering persons with psychiatric disabilities 20 September 2016.

Mr. Amandeep Sandhu, noted writer, visited the Dept. of Mental Health Education, 21 September 2016.
Dr. Sukanya Raghunath, Yoga Therapist, Tapovana Yoga Centre, Bengaluru, visited the Dept. of Mental Health Education and delivered a lecture, 'Yoga and Mental Health', 22 September 2016.

Dr. Gireesh Gangadharan, Institute for Basic Science, South Korea, visited the Dept. of Neurophysiology and delivered a lecture, 'Neural control of exploratory behavior', 22 September 2016.

Dr. Maria E Malott, CEO, Association for Behavior Analysis International, visited the Dept. of Child and Adolescent Psychiatry, 22 September 2016.

Dr. Ingunn Sandaker, Professor & Programme Director of the Master and Research Programme Learning in Complex Systems, Oslo and Akershus University College, Norway, visited the Dept. of Child and Adolescent Psychiatry, 22 September 2016.

Dr. Linda J Parrot Hayes, Professor, Psychology Department, University of Nevada, Reno, USA visited the Dept. of Child and Adolescent Psychiatry, 22 September 2016.

Dr. Maria Martha Hubbner, Professor of Experimental Psychology, Institute of Psychology, University of São Paulo, Brazil visited the Dept. of Child and Adolescent Psychiatry, 22 September 2016.

Dr. Gopen Kumar Kundu, Associate Professor of Pediatric Neurology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Bangladesh and Deputy Director, Autism Cell, Ministry of Health and Family Welfare, Government of the People's Republic of Bangladesh, visited the Dept. of Child and Adolescent Psychiatry, 26-28 September 2016.

Dr. Geraldo Busatto, Dr. Susan Andrews, Dr. Emanuel Burdmann, Dr. Laura, Dr. Tatiannaperotti, Dr. Rajesh Kotecha, and Dr. Hemant Bhargav from the University of Sao Paulo Medical School, Brazil, visited the Dept. of Psychology, 23-26 October 2016.

Prof. Michael Hornberger, Head, Department of Medicine and Programme Director, Applied Dementia Research, Norwich Medical School, University of East Anglia, UK, visited the Dept. of Neurology and delivered a lecture, 'Subcortical contributions to cognitive symptomatology in neurodegenerative disease', 8 November 2016.


Dr. Nirmala Srinivasan, Founder, FACEMI (Families Alliance on Mental Illness), Bengaluru and Founder President, AMEND (Association for Mentally Disabled), visited the Psychiatric Rehabilitation Services unit, 15 November 2016.

Dr. RL Bijalani, former professor and head, Department of Physiology, All India Institute of Medical Sciences (AIIMS), New Delhi visited NIMHANS and delivered a public lecture, 'Yoga, Spirituality and Modern Medicine', 18 November 2016.

Dr. Peter Enticott, Associate Professor of Psychology, Deakin University, Australia, visited the Dept. of Psychiatry, 19 November 2016.

Dr. Krishan Batra, Psychiatrist, USA, visited the Dept. of Psychiatry, 20 November 2016.

Dr. Bruce Trigg, Specialist in Buprenorphine Treatment, Albuquerque, New Mexico, visited the Dept. of Psychiatry, 21-23 November 2016.

Jennifer Cole and Maggie Hills, Royal United Services Institute, UK, visited the Dept. of Neuro Imaging & Interventional Radiology, 22 November 2016.

Dr. Anil Kumar Mishra, Institute of Nuclear Medicine & Allied Sciences (INMAS), Delhi, visited the Dept. of Neuro Imaging & Interventional Radiology, 22 November 2016.

Prof. Baljinder Singh, Department of Nuclear Medicine PGIMER, Chandigarh visited the Dept. of Neuro Imaging & Interventional Radiology, 22 November 2016.

Dr. Narayan Ramakrishna, Head, Laboratory of Molecular Neuroscience, Department of Molecular Biology, Institute for Basic Research (IBR), New York, USA, visited the Dept. of Neurochemistry and delivered a lecture, 'Epigenetics and Down Syndrome', 25 November 2016.

Dr. Latha Satyen, School of Psychology, Deakin University, Australia, visited the Dept. of Clinical Psychology and delivered a talk, 'Cultural consideration in the prevention and intervention of family violence', 28 November 2016.

Prof. J Andoni Urtizberea, Neuro-Physician and Consultant, Hendaye/Head, Summer School of Myology, Paris, visited the Dept. of Neurological Rehabilitation and Dept. of Neurology, delivered

Prof. J Andoni Urtizberea, Neuro-Physician and Consultant, Hendaye/Head, Summer School of Myology, Paris

Prof. Jeremy Hall, Director and Research Theme Lead, Neurosciences & Mental Health Research Institute, Cardiff University, UK, visited the Dept. of Psychiatry and the Dept. of Child and Adolescent Psychiatry (CPC & APC wards), 8 December 2016.

Prof. Jonathan Chick, Medical Director, Castle Craig Hospital, Scotland, UK and Chief Editor of Alcohol and Alcoholism (official journal of the Medical Council on Alcohol), and Prof. Sven Andreasson, President, INEBRIA – International Network on Brief interventions for Alcohol and Other Drugs, visited the Dept. of Psychiatry, 12-13 December 2016.

Dr. Ashwini D Sharan, Professor of Neurosurgery, Program Director, Epilepsy and Neuromodulation Neurosurgery, Thomas Jefferson University, Philadelphia

Dr. Ashwini D Sharan, Professor of Neurosurgery, Program Director, Epilepsy and Neuromodulation Neurosurgery, Thomas Jefferson University, Philadelphia, and President Elect, Congress of Neurological Surgeons, visited (i) the Dept. of Neurosurgery and delivered a guest lecture, ‘Big Data in Epilepsy’, 13 December 2016 (ii) the Dept. of Neuropathology, 26 December 2016.

Dr. Peter Sundman, Clinical Social Worker and Solution Focused Practice Consultant & Trainer, TaitoBa, Helsinki, Finland, visited the Dept. of Psychiatric Social Work and delivered a lecture, ‘Solution Focused Intervention in Conjugal Relationship’, 21 December 2016.

Prof. HS Dhami, Vice-Chancellor, Uttarakhand Residential University, Almora, Uttarakhand, visited the Dept. of Biophysics, 31 December 2016.

Ms. Lucy, Psychologist and Founder of SLV Global, Mental Health Placement for Psychology, UK, visited the Dept. of Mental Health Education, 6 January 2017.

Dr. Robin Sengupta, Professor of Neurosurgery, Institute of Neurosciences Kolkata (INK), visited the Dept. of Neuropathology, 6 January 2017.

Ms. Janaki, FAME India, visited the Psychiatric Rehabilitation Services unit, 10 January 2017.

Mrs. Rekha Shridhar and team from Rotary Inner Wheel Club of Bangalore (South) visited the Psychiatric Rehabilitation Services unit, 20 January 2017.

Dr. Arnaud Delorme, Sr. Professor, Paul Sabatier University and adjunct faculty at the Swartz Center for computational neuroscience at University of California, San Diego (UCSD), visited the Human Sleep Research Laboratory, Dept. of Neurophysiology and delivered a lecture, ‘EEGLAB tool box’, 20-21 January 2017.

Mr. Johny PA, Jyothi Nivas Rehabilitation Centre, Wayanad, visited the Psychiatric Rehabilitation Services unit, 21 January 2017.

Dr. Avdesh Sharma, Psychiatrist, Parivartan Centre for Mental Health, New Delhi, visited the Dept. of Mental Health Education, 23 January 2017.


Prof. Ehud Klein, Chairman, Department of Psychiatry, Rambam Health Care Campus, Haifa, Israel, visited the Dept. of Psychiatry, 8-9 February 2017.

Dr. Haslina Mohd Yusof, Dr. Sivakumar Thurairajasingam, VM Ashok Kumar, Azian Idawati bt Mohd Ramli from Hospital Permai, Malaysia, as part of their study tour, visited the Dept. of Psychiatry, 8-9 February 2017.

Mr. Manjunath, Joint Director, Ministry of Rural Development and Panchayat Raj, Government of Karnataka, visited the Psychiatric Rehabilitation Services unit to discuss various schemes under Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), 9 February 2017.

Shri. Arun Singhal, Joint Secretary, Department of Health & Family Welfare, Govt. of India visited the Psychiatric Rehabilitation Services unit, 10 February 2017.

Dr. Rashmi Bansal, Professor, Department of Neuroscience, University of Connecticut (UConn) Health, Connecticut, USA, visited the Dept. of Biophysics, 13 February 2017.

Dr. Nivedita Gupta, Scientist, Indian Council of Medical Research (ICMR), visited the Dept. of Neurovirology, 14 February 2017.

Dr. Anant B Patel, Principal Scientist, NMR Micro-imaging and Spectroscopy, Centre for Cellular and Molecular Biology (CCMB), Hyderabad, visited the Dept. of Neurophysiology and delivered a lecture, ‘13C NMR Investigations of Neurotransmitters Energetics in Alzheimer’s Disease’, 17 February 2017.

Shri. Lav Agrawal, Joint Secretary, Ministry of Health & Family Welfare, Govt. of India, visited the Dept. of Child and Adolescent Psychiatry (CPC & APC wards), 22 February 2017.

Dr. Adrian W Gelb, Professor, University of California, San Francisco, USA visited the Dept. of Neuroanaesthesia and Neurocritical Care and delivered a lecture, ‘Improving anesthesia safety’, 27 February 2017.

Prof. Moeller, Clausthal University of Technology, Germany, visited NIMHANS and delivered a guest lecture, ‘Digital Hospital Administration’, 8 March 2017.

Dr. Soumya Swaminathan, Director General, ICMR & Secretary, Department of Health Research, Ministry of Health & Family Welfare, Govt. of India, delivered Dr. D.N. Prasad Oration, ‘Challenges and Opportunities in TB for 21st Century’, 13 March 2017.

Dr. Soumya Swaminathan, Director General, ICMR & Secretary, Department of Health Research, Ministry of Health & Family Welfare, Govt. of India

Dr. Soumya Swaminathan, Director General, ICMR & Secretary, Department of Health Research, Ministry of Health & Family Welfare, Govt. of India

Prof. CR Mukundan, Honorary Professor of Psychology, Punjab University, Chandigarh and former head, Department of Clinical Psychology, NIMHANS delivered a talk, ‘Emotion – The Driving Force’, as part of the Cognitive Neuroscience Forum –Lecture Series, 4 March 2017.

Dr. Shantala Hari Dass, Postdoctoral Fellow, Prof Michael Meaney’s Lab, Douglas Mental Health University Institute and McGill University, Montréal, Canada visited NIMHANS and delivered a lecture, ‘Polygenic markers of resilience: A genome wide study’, 15 March 2017.

Dr. Shantala Hari Dass, Postdoctoral Fellow, Prof Michael Meaney’s Lab, Douglas Mental Health University Institute and McGill University, Montréal, Canada visited NIMHANS and delivered a lecture, ‘Polygenic markers of resilience: A genome wide study’, 15 March 2017.

Dr. Petri Toivainen, Professor of Music, Dr. Vinoo Alluri, Post-doctoral Researcher, and Dr. Suvi Saarikallio, Docent of Music Psychology, from the University of Jyväskylä, Finland, visited the Dept. of Neuropathology and the Dept. of Clinical Psychology (and took part in the symposium on Neuromusicology), 15 March 2017.

Dr. Claudia M Testa, Director, Huntington Disease Program and Associate Professor, Virginia Commonwealth University (VCU), Parkinson’s and Movement Disorders Center, Virginia, USA, visited the Dept. of Neuropathology and Dept. of Neurology and delivered a lecture, ‘New movement Disorders Society tremor classification proposal: Impact on clinics and research (Clinical case discussion)’, 20 March 2017.


Dr. Mahadeb Pal, Associate Professor, Division of Molecular Medicine, Bose Institute, Kolkata, visited the Dept. of Human Genetics, 30 March 2017.
Patient Care Activities

 Registrations

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Emergencies (Casualty)

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<td>5000</td>
<td>5000</td>
<td>5000</td>
</tr>
<tr>
<td>2014-2015</td>
<td>5000</td>
<td>5000</td>
<td>5000</td>
<td>5000</td>
</tr>
<tr>
<td>2015-2016</td>
<td>5000</td>
<td>5000</td>
<td>5000</td>
<td>5000</td>
</tr>
<tr>
<td>2016-2017</td>
<td>5000</td>
<td>5000</td>
<td>5000</td>
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</table>
I. Mental Health Services

PSYCHIATRY

A. Clinical Services

<table>
<thead>
<tr>
<th>Clinical Services</th>
<th>No. of patients/cases</th>
<th>2015-16</th>
<th>2016-17</th>
</tr>
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<tbody>
<tr>
<td>Registration</td>
<td></td>
<td>16428</td>
<td>15072</td>
</tr>
<tr>
<td>Follow-ups</td>
<td></td>
<td>119769</td>
<td>134822</td>
</tr>
<tr>
<td>Admissions</td>
<td></td>
<td>5292</td>
<td>4898</td>
</tr>
<tr>
<td>Discharges</td>
<td></td>
<td>5039</td>
<td>4890</td>
</tr>
<tr>
<td>Emergencies</td>
<td></td>
<td>11031</td>
<td>8350</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>157559</td>
<td>168032</td>
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</tbody>
</table>

B. Diagnostic Services

<table>
<thead>
<tr>
<th>Lab Services – Special Tests</th>
<th>2015-16</th>
<th>2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECG</td>
<td>1124</td>
<td>1472</td>
</tr>
<tr>
<td>EEG*</td>
<td>-</td>
<td>162</td>
</tr>
<tr>
<td>Total</td>
<td>1124</td>
<td>1634</td>
</tr>
</tbody>
</table>

* New facility initiated in 2016-17

C. Special Clinics

<table>
<thead>
<tr>
<th>Special Clinics</th>
<th>New Patients</th>
<th>Follow-up Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addiction Psychiatry</td>
<td>3102</td>
<td>14336</td>
</tr>
<tr>
<td>Community Clinics</td>
<td>1810</td>
<td>15344</td>
</tr>
<tr>
<td>Geriatric Clinic</td>
<td>1183</td>
<td>3401</td>
</tr>
<tr>
<td>In STAR Clinic</td>
<td>101</td>
<td>2454</td>
</tr>
<tr>
<td>OCD Clinic</td>
<td>522</td>
<td>2052</td>
</tr>
<tr>
<td>Perinatal Clinic</td>
<td>203</td>
<td>1037</td>
</tr>
<tr>
<td>Genetic Testing and Counselling Clinic</td>
<td>178</td>
<td>70</td>
</tr>
</tbody>
</table>

| Total                         | 7099        | 38694              |

Center for Addiction Medicine (CAM)

The Centre for Addiction Medicine (CAM) continued to provide comprehensive inpatient programme consisting of individual and family assessments. Individually tailored treatments involved pharmacological interventions for withdrawal and long-term prevention of relapse, individual and group counseling, family counseling and intensive aftercare. The first phase of digitalization of patient assessment has been initiated.

The CAM registered 3102 new patients, 14336 outpatient follow-ups and 16732 telephonic follow-ups during 2016-17. A total of 1153 patients were admitted to the CAM in-patient facility. About 135 adolescents and 119 female patients sought specialized treatment during the review period.

Drug-Toxicology Laboratory: Around 17525 samples for drugs and alcohol in urine and blood were tested at the Drug-Toxicology Laboratory during 2016-17. One more e-machine for testing samples was added to the facility to keep up with the growing demand. The lab has been receiving requests from outside agencies for tests to be done, since it is the only facility for such testing in the region.

Opioid Treatment Clinic: This clinic provides comprehensive treatment for the patients addicted to different opioids. The Buprenorphine Maintenance Treatment (BMT) was extended to 90 patients during this period.

Tobacco Cessation Centre (TCC): The multidisciplinary TCC team conducted a two-day workshop on Tobacco Use and Related Harm (Assessment, Brief Intervention and Pharmacological Management) at Oxford Dental College, Bengaluru. An exhibition and awareness rally was organised on account of World No Tobacco Day (WNTD) on 31 May 2016. A total of 207 patients received treatment from the centre during the period.

Aftercare Services & Vocational Rehab: CAM has dedicated manpower for aftercare and vocational rehabilitation. During the review period, 28303 text messages (SMS) were sent and 16732 telephone calls made to the patients expected to come for the follow-ups. About 185 home visits were conducted to facilitate effective treatment and enhance follow-up compliance of the patients. Job placements were facilitated for unemployed patients. Online automated software is being used by the aftercare team to maintain the database and send reminders to the patients about the follow-up.

Community Outreach Services: Community social workers conducted 42 addiction awareness and prevention programs at various Anganwadi centres, PHCs, educational institutions and workplaces in 2016-17. They have been successful in educating communities about addiction and setting up prevention strategies for drug and alcohol related problems.

Community Mental Health

Community psychiatry activities are being actively carried out by NIMHANS for more than four decades. Sakalwara Community Mental Health Centre (SCMHC) at Ankal taluk, the hub of all community mental health activities, has expanded its horizon to offer resource building, training and telemedicine services. Community Psychiatry Services are delivered by a multidisciplinary team consisting of psychiatrists, psychiatric nursing, psychiatric social work, clinical psychology, and vocational trainers.
The community team provides outpatient services here thrice a week (on Monday, Wednesday and Friday). Based on their clinical profile of patients a detailed work-up is done by residents and trainees posted in the centre, under the supervision of senior residents and consultants. Patients come from far off places to seek treatment for various mental ailments and related problems. Free medicine is provided for below poverty line patients at the centre.

Nursing staff and trainees repeatedly conduct health education programs for patients and family and dispense medications with clear information on compliance and regimen. Clinical Psychology (CP) team performs brief therapeutic interventions, assessments for IQ and SLD, CBT for depression and OCD. The Psychiatric Social Work (PSW) team provides supportive therapy, disability welfare benefits and occupational rehabilitation counselling services.

Residential rehabilitation services are made available in 22 cottages for short-term (~ 3 months) stay of persons with chronic mental illness. Such patients referred by adult psychiatry units of NIMHANS can stay with their family members. Common group activities as well as personalized activities — depending on the initial assessment and the nature of the patients — are conducted under supervision. In-house activities for re-establishment of work habits for the chronically ill include classes/training in craft, tailoring, computer skills, etc. at the Mahobodhi building of SCMHC. Daily yoga sessions, individual and group therapies for families and inmates like social skills training, cognitive remediation, etc. are also carried out. The kitchen on the campus also serves as a place for group activities like cooking demonstrations and tea parties organized by patients.

| No. of Patients/Visitors to SCMHC for IP care | 72 |
| Total no. of referrals | 41 |
| Total no. of inpatients | 37 |
| Total no. of patients placed for supported employment | 16 |

The nursing staff visited chronically ill patients who do not have proper support to reach out to medications. About 30 home visits were conducted by them in the nearby areas of Sakalawara, within Anekal Taluk. PSW team visited 10 houses of the patients registered at the OPD—who were from economically weaker sections or who had poor family support.

**Extension /Satellite Clinics – CAMPS**

As part of the Manochaitanya programme launched by the Government of Karnataka, extension camps/clinics are conducted on Tuesdays at government taluk hospitals or Primary Health Centres with the intent to support the local professionals and provide specialist care to the patients. The camps are being held in collaboration with the respective District Mental Health Programme (DMHP) teams.

<table>
<thead>
<tr>
<th>Camp</th>
<th>Patients Seen</th>
<th>Day</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anekal General Taluk Hospital</td>
<td>870</td>
<td>4th Tuesday</td>
<td>Ongoing with DMHP</td>
</tr>
<tr>
<td>Kanakapura Taluk Hospital</td>
<td>2047</td>
<td>1st Tuesday</td>
<td>Ongoing with DMHP</td>
</tr>
<tr>
<td>Gunjur PHC</td>
<td>1992</td>
<td>1st Tuesday</td>
<td>Ongoing with DMHP</td>
</tr>
<tr>
<td>Gowribidnur Taluk Hospital – THO Office</td>
<td>3242</td>
<td>2nd Tuesday</td>
<td>Handed over to DMHP</td>
</tr>
<tr>
<td>Madhugiri Taluk Hospital</td>
<td>2464</td>
<td>3rd Tuesday</td>
<td>Handed over to DMHP</td>
</tr>
<tr>
<td>Maddur Taluk Hospital</td>
<td>2140</td>
<td>4th Tuesday</td>
<td>Ongoing with DMHP</td>
</tr>
<tr>
<td>Nirashritara Parihara Kendra – Magadi Road</td>
<td>30</td>
<td>3rd Tuesday</td>
<td>Ongoing with DMHP</td>
</tr>
<tr>
<td>SCMHC OPD</td>
<td>4399</td>
<td>Mon/Wed/Fri</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>17184</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The multidisciplinary community team provided hands-on training to the DMHP team and helped them in the process of decentralized mental health services and integration of mental health care with general primary health care, which are the major thrust areas for NMHP.

**Geriatric Clinic & Services**

Geriatric Clinic and Services has been offering multidisciplinary care to the elderly with neuropsychiatric disorders (aged 60 years and above) for about 15 years. The clinic has now evolved into a separate Geriatric Psychiatry Unit under the Department of Psychiatry with full-time faculty members and staff from 1 November 2016. The clinical services are being offered thrice a week (Tuesday, Wednesday and Saturday) from January 2017. During the review period, 1183 new patients and 3401 follow-up patients were seen.

The multidisciplinary group/team at the unit comprises psychiatrists, neurologists, neuropsychologists, social workers, residents and trainees. The elderly who register with the screening outpatient services are referred to the Geriatric Psychiatry Unit Services team for detailed evaluation and further management of various neuropsychiatric disorders. This process facilitates easier identification of mental health problems in the elderly—avoiding delay in referrals and enabling initiation of appropriate intervention. Group meeting for the caregivers of elderly with neuropsychiatric disorders (aged 60 years and above) are conducted once a week on Saturdays by the Psychiatric Social Work team.

The Geriatric Clinic and Services team has significantly contributed towards translational research in the field of ageing. NIMHANS was honored with “Vayoshreshtha Samman” National Award as the “Best Institution for Research in the Field of Ageing” for the year 2016.
The Geriatric Clinic and services team is also actively involved in various community activities. As part of the World Alzheimer's Day 2016, the Geriatric Clinic and Services team in association with Alzheimer's and Related Disorders Society of India (ARDSI)—Bengaluru Chapter and Nightingales Medical Trust, organised the campaign 'Bangalore a Dementia Friendly City by 2020' at Cubbon Park on 25 September 2016. At NIMHANS, World Alzheimer's Month was observed and valedictory function of the same was held on 27 September 2016. iSupport project for caregivers of people with dementia was launched on the occasion.

The Geriatric Clinic and Services team along with the Department of Mental Health Education, NIMHANS actively took part in the ‘Senior Citizens Mela’ organised by the Sankara Eye Hospital & Manashanti Trust at Sankara Eye Hospital on 19 February 2017.

**Individualized Schizophrenia Treatment And Reintegration (INSTAR) Programme**

The special clinical services of the Schizophrenia Clinic and the Metabolic Clinic have been integrated to formulate a comprehensive program – Individualized Schizophrenia Treatment and Reintegration (InSTAR). The mission of InSTAR programme is to ensure a personalized clinical approach towards understanding and treating individuals with schizophrenia and related psychoses. The acronym InSTAR (“instar”) also means a “stage of change” reflecting the overarching goal of the InSTAR program to effect an “inclusive” transformation with an emphasis on “individualization” of treatment approaches in schizophrenia.

The InSTAR programme encompasses several components that involve an integrated multidisciplinary team of experts from psychiatry, psychiatric social work, clinical psychology and yoga therapy. Depending upon the individual requirements of the patients, through these special clinics, additional specific interventions like Yoga Therapy, Transcranial Direct Current Stimulation (tDCS)/other weak intensity neuromodulation techniques, cognitive therapies, family interventions and other similar specialized interventions are offered. To facilitate early identification and intervention for psychosis – a specialized clinical module – namely, Objective Risk Assessment, Care and Liaison for Early Schizophrenia [ORACLES] – is made available.

During the review period, 101 new patients were registered and 2454 received follow-up care.

**Obsessive Compulsive Disorder (OCD) Clinic**

The Obsessive Compulsive Disorder (OCD) clinic is a specialized clinic for the evaluation and treatment of OCD patients, which has been running for the past 20 years at NIMHANS. This is the largest outpatient clinic facility for the treatment of OCD patients in India.

In the year 2016-17, a total of 522 new patients were evaluated and 2052 patients were periodically followed up. The OCD clinic offers outpatient services every Tuesday in the OPD block of NIMHANS. Severely ill and/or treatment resistant patients with OCD are routinely admitted to the wards for intensive pharmacological and psychosocial interventions.

The aim of the clinic has three facets: providing specialized clinical services, training mental health personnel in OCD/severe anxiety disorders and conducting research. The treatment modalities used include pharmacotherapy, cognitive-behavior therapy, non-invasive neuromodulatory techniques and in extremely refractory cases, psychosurgery/deep brain stimulation. OCD clinic has a good consistent track record in research in various aspects of OCD such as clinical parameters, treatment response, comorbidity, course/outcome, genetics and neuroimaging. The research support is derived from various prestigious grants to the faculty by the department of science and technology and the department of biotechnology, Government of India. The faculty of the OCD clinic include experts in various research modalities mentioned above and have won various national and international grants/awards. The clinic also has a welcome trust-DBT India alliance fellowship grant with a project on non-invasive neuromodulation (tDCS) sanctioned this year. Recently, the clinic has become part of international collaborative projects such as R01 NIMH grant (multicentric study in neuroimaging in OCD) and the ENIGMA OCD brain imaging group. To commemorate two decades of OCD clinic at NIMHANS, a symposium on OCD and related disorders is planned in October 2017, with internationally renowned speakers.

**Perinatal Psychiatry**

The Perinatal Psychiatric Service consists of two service arms: the Perinatal Outpatient Psychiatry Service, which is a once-a-week clinic (run on Fridays), and five-bedded Mother-Baby Inpatient Psychiatry Unit.

This service is dedicated to helping the mother, the mother-infant dyad, husbands and families who need treatment, support and guidance for any mental health problem related to pregnancy or child birth. Outpatient services, run by a multidisciplinary team, include preconception counselling, handling mental health issues in pregnancy and the postpartum, interpersonal and cognitive behavioral psychotherapy, family and marital counselling, and assessments and interventions for mother-infant bonding problems, including video enabled interventions.

Mothers who need inpatient care are admitted to the Mother-Baby unit with infants. Apart from the treatment of mental health problems, specific focus is on risk assessment and mother-infant bonding as well as breastfeeding restoration. Groups are held for fathers to increase support for the mother infant dyad, provide education and ensure treatment adherence.
The multidisciplinary team consists of psychiatrists, clinical psychologists, developmental psychologists, psychiatric social workers, psychiatric nurses and volunteers.

During the period 2016-17, a total of 203 new patients were seen and 1037 received follow-up care.

Services in NIMHANS Centre for Well Being (NCWB): Women with pregnancy and childbirth related mental health problems, from the surrounding antenatal and maternal health centres, are referred to NCWB, where clinical services are conducted on Tuesday and Friday afternoons. Women are referred form.

Services in PHCs and Anganwadi Centres: Video enabled training kit (in Kannada) was developed for community health workers. The kit focuses on (a) importance of mental health during perinatal period (b) assessment of mental health during pregnancy (c) assessment of mental health during postpartum (d) interventions that can be done by community health workers for common mental health issues during pregnancy and postpartum.

National Media Coverage: A documentary on maternal mental health was aired on national television channel NDTV that featured both inpatient and outpatient perinatal psychiatry services of NIMHANS.

Genetic Counselling and Testing (GCAT) Clinic

The purpose of this facility is to conduct evaluation for known mutations in subjects clinically diagnosed as Huntington’s disease, spinocerebellar ataxia, etc. Patients and relatives are counseled prior to the collection of blood samples for diagnosis of Huntington’s disease and autosomal dominant disorders/conditions. GCAT team is involved in genetic testing and pre-genetic and post-genetic counseling of the patients whose neurological examination has been done by a neurologist and confirmed to show symptoms of the disease. Pre-Genetic Counseling involves educating and counseling about the implications of the testing. Genetic testing undertaken in the lab is accurate and reliable. Most people get a result which is definitely normal or definitely abnormal. However, a small number of people fall into a “grey area”, between the normal and the abnormal range. Post-genetic counseling involves disclosure of results by the clinician keeping in mind the sensitive nature of the issue.

E. Special Services and Procedures

<table>
<thead>
<tr>
<th>Special Services</th>
<th>New Patients</th>
<th>Follow-up Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telemedicine</td>
<td>278</td>
<td>-</td>
</tr>
<tr>
<td>Yoga</td>
<td>1685</td>
<td>12014</td>
</tr>
</tbody>
</table>

Telemedicine Services

NIMHANS has been offering telemedicine services for about a decade now, keeping pace with the advancement in healthcare technology. The upgraded Telemedicine Centre was inaugurated on 9 February 2017 by Shri Sanjeeva Kumar, Additional Secretary, Ministry of Health and Family Welfare, Government of India. The centre is now equipped with state-of-the-art facilities including dedicated electronic health record based telemedicine solutions (Mercury Nimbus from CDAC, Pune) for conducting and monitoring the tele-consultations.

Inauguration of upgraded Telemedicine Centre by Shri Sanjeeva Kumar, Additional Secretary, Ministry of Health and Family Welfare, Government of India on 9 February 2017.

Tele Aftercare Program was also introduced last year to facilitate follow-up care for patients discharged from psychiatry wards using digital technology. Plans are afoot to expand this facility to all other clinical departments as well.

Virtual NIMHANS Clinic (VNC), another vital part of the telemedicine services, is a collaborative model connecting the Institute to various districts and taluk hospitals in Karnataka. The facility is also connected to two central prisons of the state.

Electroconvulsive Therapy (ECT) Services

ECT has been an integral part of psychiatry practice, ever since it was first described about 80 years back, and NIMHANS has consistently been at the forefront of research and clinical application in this regard. Currently, it has one of the most-advanced ECT suites in the country, and regularly caters to the clinical, research and man-power development needs in this field.
At NIMHANS, the ECT-suite works with inputs from, and active collaboration between, a multidisciplinary team comprising of members from the Psychiatry, Neuroanesthesia and Nursing faculties. This dedicated suite is housed in the Psychiatry Open General Ward, and apart from the procedural room, it has a pre-ECT preparation room and a post-ECT recovery section. Additionally, it has a separate waiting hall for patients and their attendants.

The suite has three ECT delivery systems, with facilities for recording ictal-EEG activity. It also has separate cardiovascular monitors and a dedicated defibrillator, for monitoring and managing cardiac emergencies during the procedures. All the administered ECT sessions are modified, and a few of them are EEG-monitored. On an average, about 25 patients receive ECTs every working day for various psychiatric indications. During the review period, 1084 new patients received ECTs, and a total of 7642 ECT sessions were administered.

Transcranial Magnetic Stimulation (TMS) Laboratory

The state-of-the-art Transcranial Magnetic Stimulation (TMS) laboratory, housed in the ECT wing since 2010, has been carrying out a number of investigational and therapeutic trials of TMS. The TMS lab also provides clinical services in the treatment of resistant neuropsychiatric disorders that include depression, OCD, tic disorder, auditory hallucinations in schizophrenia, dissociative disorders, tinnitus, somatization disorders and motor aphasia. The TMS Lab has received extra-mural funding from the Department of Science & Technology (three projects), Wellcome Trust / DBT India Alliance (two Fellowships) and Department of Biotechnology (one project).

The TMS Lab has three repetitive pulse delivery enabled systems, two of which can perform investigational paradigms to assess cortical motor physiology using paired pulse paradigms supported by an electromyography system. A state-of-the-art MRI-guided neuronavigation system (see attached figure) has also been acquired and is in use for both research and clinical applications; the latter includes clinical investigations like pre-surgical motor cortex mapping apart from site localization for therapeutic TMS. Novel patterned TMS protocols like intermittent and continuous theta burst stimulation have also been applied in certain indications. The lab also has diverse TMS coils (figure-of-eight, double cone, D-coils and active-placebo coils) that can expand the clinical and research applications of TMS.

In 2016-17, a total of 937 TMS sessions were delivered (335 as a part of research applications and 602 as clinical applications), among these 256 sessions were carried out using neuronavigation. MD psychiatry residents are also trained in basic principles, therapeutic procedure, and selection of potential patients for treatment by appropriate screening procedures and monitoring of adverse effects during treatment. The TMS lab facility in the department is currently supporting four MD dissertations, one DM dissertation, two PhD dissertations, one Early Career Fellowship and one Research Training Fellowship under the Wellcome Trust / DBT India Alliance. Research trainees from other institutions have also visited for 2-week to 6-month long Fellowships / Observerships in TMS. The faculty involved in the TMS lab, in collaboration with faculty from other brain stimulation services like ECT and tDCS in the Department of Psychiatry have organized a series of workshops on Non-invasive Brain Stimulation (NIBS) in Psychiatry with the focus on developing manpower capable of using these treatment modalities across the country.
Based on this WISER neuromodulation paradigm, in the year 2016 – 2017, the faculty co-ordinators of the tDCS have expanded the range of techniques and implemented the WISER Neuromodulation Programme. In addition to the clinical research services, the programme also has a strong research component to understand the neurobiological mechanisms underlying the effect of these techniques in patients as well as the neural correlates in healthy population. These research studies are being supported by the prestigious Swarnajayanti Fellowship Research Award Grant by the Department of Science and Technology, Government of India.

New WISER Neuromodulation techniques that have been implemented (in 2016-17) include tACS, tRNS. High Definition tDCS [HD-tDCS], an optimized tDCS technique, has also been initiated. MRI-guided HD-tDCS protocol has been standardized and implementation is in process. The protocol will utilize precise, personalized placement of electrodes using state-of-the-art optical localization technique guided by subject-specific structural / functional MRI in combination with computational analyses that simulate electrical activity spread in the brain to ensure ‘personalized, computational neuromodulation’.

In the recent past, substantial background works on tDCS at the Department of Psychiatry supported by extramural research grants have reported clinical benefits by peer-reviewed research publications. Ongoing works in the WISER Neuromodulation Program, department of psychiatry has been incorporated in International Regulatory Guidelines for tDCS. Peer-reviewed research publications from the WISER program has reported following clinical benefits: successful implementation of tDCS for treating Schizophrenia with treatment resistant auditory hallucinations with evidence support from randomized, sham-controlled study, treatment resistant obsessive-compulsive disorder (preliminary evidence support using randomized, sham-controlled study) improvement of insight in schizophrenia, application in a pregnant woman with schizophrenia / depression as well as booster sessions for schizophrenia and OCD.

During 2016-17, faculties from all specialty clinics in the Department of Psychiatry (Schizophrenia, Obsessive Compulsive Disorder, Geriatric Psychiatry, Center for Addiction Medicine, Perinatal Psychiatry Clinic and Mood Disorders) as well as from the Department of Child and Adolescent Psychiatry have initiated clinical research studies involving WISER neuromodulation techniques with aim towards integrating this with regular clinical practice in due course. In the year 2017-18, other WISER Neuromodulation techniques (tVNS, GVS, tPCS, tRNS and magnetic, ultrasonic, infrared / laser energy based techniques) will be implemented.

Consultation Liaison Psychiatric Services

Consultation Liaison Psychiatry (CLP) unit focuses on providing psychiatric care to patients referred from other medical/surgical specialties. Referred patients are seen at bedside and on the same day of referral. There has been a steady increase in the number of referrals in the recent years. CLP unit also runs a biweekly psychiatric clinic at NIMHANS Centre for Well-Being (NCWB).

During 2016-17, a total of 350 in-patients from Neurology and Neurosurgery wards of NIMHANS were provided with psychiatric care by the unit. The CLP services have grown beyond the campus, extending to other outreach centres. A total of 150 patients with TB and other respiratory diseases were treated for psychiatric co-morbidity at Rajiv Gandhi Institute of Chest Diseases. As many as 125 patients with diabetes mellitus and other endocrinological diseases received treatment at Jnana Sanjeevani Medical Centre, a NGO-funded, diabetic and endocrinology clinic. About 125 patients with various malignancies were evaluated and treated for psychiatric morbidity at Kidwai Memorial institute of Oncology.

In addition to routine pre and post-surgical psychiatric evaluations of patients undergoing epilepsy surgery, various new initiatives were taken up in collaboration with the departments of neurology, neurosurgery and neuroradiology. CLP unit participated in 35 meetings on refractory epilepsy along with neurology, neurosurgery and radiology.

Total number of new patients seen under CLP

| Referrals from Department of Neurology and Neurosurgery | 350 |
| Rajiv Gandhi Institute of Chest Diseases | 150 |
| Diabetic and Endocrinology Clinic | 125 |
| Kidwai Memorial Institute of Oncology | 125 |
| Total | 750 |

Forensic Psychiatry Services

The Department of Psychiatry initiated Forensic Psychiatry Services from the review period. The induction of PDF in Forensic Psychiatry has facilitated a systematic approach of soliciting forensic referrals (both inpatients and outpatients). Almost all new prison patients who are sent to NIMHANS for psychiatric opinion is being screened by
the Forensic PDF and half of the prison-ward cases (inpatients) are being seen by the Forensic Psychiatry team. Additionally, an updated proforma (for forensic case-taking) was finalized and made available.

About seven-ten external students from various colleges of the country are posted to the forensic unit for training (15-21 days) in a month. The forensic team actively engages the students in learning the forensic issues and in the treatment of patients under the unit, apart from conducting classes on forensic psychiatry topics.

In a month, on an average, follow-up of about 30-35 prison patients and 100-120 safe custody files are conducted. About 15-20 new prison patients are referred to the unit for evaluation and two-three patients, in a month, come with a reception order for admission.

In the inpatient setting, about three-four prison patients are referred to the unit in a month for opinion on fitness to stand trial and two-three patients from workplace for opinion on fitness to work. Referrals from other units with diverse issues such as patient being a victim of domestic/sexual abuse, violation of patients’ rights, marriage being affected due to illness, etc. are also received. Plans are underway to develop the unit into a full-fledged service and start dedicated Forensic Psychiatry OPD.

Legal Aid Clinic

The Legal Aid Clinic, established in collaboration with the Karnataka State Legal Services in 2011, provides legal services free of cost to persons with mental illness. The clinic is held two days a week, on Tuesdays and Fridays (from 3.00 pm to 5.00 pm). Persons with disabilities can assert their rights using such clinics in matters such as disability certification, employment and pension. They can also defend their rights regarding admission to mental hospitals, human rights violation, treatment, property issues and marital issues. Additionally, these kinds of services could help in making patients aware of their rights and equip them to avail the benefits of the different social welfare activities sponsored by the State and Central Government. Women can also seek help in issues such as sexual violence, domestic violence, property related issues, etc. Two advocates appointed by Karnataka State Legal Services Authority, leasing with teams from the Departments of Psychiatry and PSW, have been helping the patients in getting free legal advice, support and adjudication.

In the year 2016-17, a total of 306 patients/families availed the services offered by the clinic.

Centre for Brain Mapping

The Centre for Brain Mapping, a new clinical and research facility for EEG and sleep studies of the Department of Psychiatry was inaugurated by Shri Anshu Prakash, Joint Secretary, Ministry of Health and Family Welfare, Govt. of India on 1 June 2016. The Centre houses two EEG systems a 32-channel EEG system for clinical EEG services and a 128 channel EEG system for polysomnography and EEG/ERP research. The centre also has a source analysis package featuring Geodesic Photogrammetry System 2.0 and GeoSource 2.0, a complete system to digitize 3D position of EEG electrodes. The centre offers clinical EEG services for the Department of Psychiatry and also supports research activities of the DBT-funded ADBS (Accelerator programme for Discovery of Brain disorders using Stem cells) as well as PhD research projects.

NIMHANS CENTRE FOR WELL BEING (NCWB)

A. Clinical Services

<table>
<thead>
<tr>
<th>Facilities provided</th>
<th>No. of patients/cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephonic Enquiries</td>
<td>1280 1673</td>
</tr>
<tr>
<td>Total New registrations</td>
<td>500 665</td>
</tr>
<tr>
<td>Consultation Liaison Psychiatry</td>
<td>202 270</td>
</tr>
<tr>
<td>Marital Enrichment services</td>
<td>33 42</td>
</tr>
<tr>
<td>Right Choice Clinic (CAM)</td>
<td>13 4</td>
</tr>
<tr>
<td><strong>Aaraike and Child Parent Well Being</strong></td>
<td>82 119</td>
</tr>
<tr>
<td>Stress management and lifestyle clinic</td>
<td>36 51</td>
</tr>
<tr>
<td>Flourish Clinic (Positive Mental Health Clinic)</td>
<td>28 28</td>
</tr>
<tr>
<td>Psychology Care Clinic</td>
<td>49 54</td>
</tr>
</tbody>
</table>
**CHILD & ADOLESCENT PSYCHIATRY**

A. Clinical Services

<table>
<thead>
<tr>
<th>Clinical Services</th>
<th>No. of patients/cases</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2015-16</strong></td>
<td><strong>2016-17</strong></td>
</tr>
<tr>
<td>Screening</td>
<td>6959</td>
</tr>
<tr>
<td>Registration</td>
<td>3851</td>
</tr>
<tr>
<td>Follow-ups</td>
<td>14580</td>
</tr>
<tr>
<td>Admissions</td>
<td>590</td>
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<tr>
<td>Discharges</td>
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<tr>
<td>Deaths</td>
<td>-</td>
</tr>
<tr>
<td>Emergencies</td>
<td>108</td>
</tr>
</tbody>
</table>

**CLINICAL PSYCHOLOGY**

A. Clinical Services

<table>
<thead>
<tr>
<th>Clinical Services</th>
<th>No. of patients/cases</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2016-17</strong></td>
<td></td>
</tr>
<tr>
<td>Registration</td>
<td>10856</td>
</tr>
<tr>
<td>Follow-ups</td>
<td>33893</td>
</tr>
</tbody>
</table>

*The figures for 2016-17 include the number of cases seen for psychological assessments and interventions in addition to detailed evaluation and routine follow-up. These figures exclude cases seen at special clinics at NCWB.

B. Special Clinics

**Marital Enrichment Clinic:** The clinic offers counselling and mediation services to those with mild marital problems. Strengths in their relationship and stability in the family are discovered in the sessions and utilized to help resolve marital problems through conjoint as well as individual sessions. Through each session, problem resolution and improvement in relationship atmosphere is promoted. Hence, the services reach out to many individuals though the visits may be by the couple or one of the spouses. Usually this service benefits couples with young school-going children.

**Stress Management and Lifestyle Clinic** (at NCWB): This clinic, which was started in 2011, is run by the Behavioral Medicine Unit at NCWB and is operational on Friday afternoons. It is aimed at offering stress management services to people from different walks of life as well as for those who require help in maintaining or achieving healthier lifestyles. The services are being carried out by faculty members and PhD scholars of the Behavioural Medicine Unit, Dept. of Clinical Psychology. MPhil Clinical Psychology trainees are posted to Stress Management and Lifestyle Clinic on rotation basis (as part of their behavioural medicine posting).

A series of workshops were conducted on academic stress, managing interpersonal relationships, understanding social anxiety and work stress for the urban community at the NCWB.

**Trauma Recovery Clinic:** The clinic offers counselling and specialised care for people suffering emotional and psychological difficulties following prolonged stress or trauma. About 20 clients were provided consultation and psychotherapy at the clinic, during 2016-17.

**Flourish Clinic:** This one-to-one consultation service is run on a weekly basis on all Saturdays (except second Saturdays and holidays) at NCWB. It caters to the concerns of adults with felt needs for professional consultation for maintaining/ enhancing their wellbeing and functioning and self-development. During the review period, about 40 new clients registered for receiving consultation services at the clinic and the typical number of sessions per client ranged between 3 and 10.

**Psychological Care Clinic:** This service is being provided at NCWB for clients experiencing stressors, difficulties in coping with day-to-day demands of their work or personal lives, emotional distress and interpersonal difficulties. A detailed evaluation is carried out to determine the nature of the problems, particularly to identify if they require a psychiatric evaluation, in which case they are referred to the Psychiatric Out-Patient Services of NIMHANS. The other clients are offered one-to-one counseling and therapeutic services as required. Interventions are usually brief, ranging from 2-8 sessions. Follow-up services for these clients are also provided. The services are provided by consultants, clinical psychologists and research scholars from the Dept. of Clinical Psychology.

**Developmental Intervention Services:** The facility offers early intervention services to infants and toddlers at risk for the developmental delay and emotional problems. This is part of the existing, weekly outpatient-based perinatal psychiatric services. There is a steady increase in the number cases utilizing these services since it was introduced in 2015-16. During the current year the facility received, on an average, six infants below the age of two years on every OP day (60% of them for follow-up services). The services are utilized by families from various parts of Karnataka and neighboring states. The data indicate that a good number of infants, who have availed the above mentioned services, are overcoming the transient developmental delays.
## C. Special Services / Procedures

<table>
<thead>
<tr>
<th>Special Services</th>
<th>2016-17</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>New Patients</td>
<td>Follow-up Patients</td>
<td></td>
</tr>
<tr>
<td><strong>Special Clinics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aadhara Camp Service to CHMR</td>
<td>94</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Perinatal Psychiatry Clinic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developmental Assessments</td>
<td>60</td>
<td>120</td>
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<tr>
<td>Infant Development Interventions</td>
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<tr>
<td>Psychological therapies (cases)</td>
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<tr>
<td><strong>Schizophrenia Clinic</strong></td>
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<tr>
<td>Psychological Assessments</td>
<td>17</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Psychological Therapies (Sessions)</td>
<td>10</td>
<td>-</td>
<td></td>
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<tr>
<td><strong>Geriatric Clinic</strong></td>
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<td></td>
<td></td>
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<tr>
<td>Neuropsychological Assessment</td>
<td>41</td>
<td>-</td>
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<tr>
<td>Neuropsychological Rehabilitation (Sessions)</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td><strong>Special Clinics at NCWB</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Marital Enrichment Services</td>
<td>40</td>
<td>87</td>
<td></td>
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<tr>
<td>Stress Management and Lifestyle Clinic (Cases/Sessions)</td>
<td>51</td>
<td>1550</td>
<td></td>
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<tr>
<td>Psychological Care Clinic (Sessions)</td>
<td>92</td>
<td>131</td>
<td></td>
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<tr>
<td>Window to Wellbeing</td>
<td>12</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Flourish –Positive Mental Health Clinic</td>
<td>55</td>
<td>105</td>
<td></td>
</tr>
<tr>
<td>Trauma Recovery Clinic (Sessions)</td>
<td>-</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td>Services for Healthy Use of Technology (SHUT) Clinic (Sessions)</td>
<td>-</td>
<td>77</td>
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</table>

*2015-16 figures are not available for comparison due to change in reporting format.*

<table>
<thead>
<tr>
<th><strong>PSYCHIATRIC SOCIAL WORK</strong></th>
<th></th>
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<tbody>
<tr>
<td><strong>Diagnostic Services</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilities provided</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2015-16</td>
<td>2016-17</td>
<td></td>
</tr>
<tr>
<td>Detailed work-up</td>
<td>3639</td>
<td>4414</td>
<td></td>
</tr>
<tr>
<td>Follow-ups</td>
<td>10872</td>
<td>14817</td>
<td></td>
</tr>
<tr>
<td>IP</td>
<td>2603</td>
<td>3245</td>
<td></td>
</tr>
<tr>
<td>OP</td>
<td>260</td>
<td>6786</td>
<td></td>
</tr>
<tr>
<td>Disability Assessment</td>
<td>282</td>
<td>298</td>
<td></td>
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<tr>
<td>Group Therapy</td>
<td>485</td>
<td>333</td>
<td></td>
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<tr>
<td>School Mental Health</td>
<td>25</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>Individual &amp; Family Assessment</td>
<td>1022</td>
<td>3774</td>
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<tr>
<td>Screening</td>
<td>284</td>
<td>253</td>
<td></td>
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<tr>
<td>Home Visits</td>
<td>30</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td>Industrial Visits</td>
<td>10</td>
<td>241</td>
<td></td>
</tr>
<tr>
<td>Family Get-Together Activities</td>
<td>53</td>
<td>1110</td>
<td></td>
</tr>
</tbody>
</table>
### Aaraike Clinic

The psychosocial care clinic for general public at NIMHANS Centre for Wellbeing (NCWB) offers: (a) Family Enrichment Programme to strengthen the families to enhance quality of life (b) Pre-marital counseling for couple to prepare them to take the responsibilities of marriage and family life (c) Industrial Mental Health services for the employees to deal with the occupational stress and promotion of positive mental health (d) Martial Enrichment Services for the couple to enhance their marital quality and their wellbeing. Relationship issues though are common in all families, depth and the level of conflicts among members in families are found to be escalated when the members continue to live in the problematic situation for long time without resolving it. Often it may be due to lack of understanding about the problematic situation as unhealthy, insensitivity to the problem and absence of commitment from members to the problem solution, lack of time together, lack of problem solving abilities, demand of work or lack of support from extended families, etc. This clinic provides services to couples and families who have issues in the most important relationship roles as, couples, parents and children or as siblings.

The clinic is run by faculty members of the Department of Psychiatric Social Work on every first and third Wednesdays between 2 pm - 4.30 pm.

### AWAKE Clinic

The clinic for women with intimate partner violence is held every second and fourth Wednesdays between 2.00 pm and 4.30 pm at NCWB. The clinic offers various services such as: (a) tailor-made mental health intervention and counselling for women with intimate partner violence/domestic violence (b) trauma care for the victims of violence (c) supportive therapy and individual therapy to build self-esteem, self-confidence, coping skills, problem solving and communication skills (d) telephone counselling; providing referral services and information regarding available resources, legal rights, shelter, care, etc. (e) support group services to women survivors of intimate partner violence (f) community based awareness programme to prevent gender based violence.

The services are being carried out by faculty members and PhD Scholars of the Department of Psychiatric Social Work.

The clinic has gained popularity in various forums that addresses the gender based violence against women. Consultant of the clinic was invited to share the model of AWAKE Clinic at a National Consultation Meeting on “Effective Communication and Intervention Strategies to Prevent and End Violence against Women in India”, organized by WISCOMP (Women in Security, Conflict Management and Peace Foundation for Universal Responsibility of His Holiness the Dalai Lama), New Delhi on 28-30 November 2016. The model was appreciated in the meeting and its replication in other parts of the country was also discussed.

### II. Neurosciences Services

#### NEUROLOGY

### A. Clinical Services

<table>
<thead>
<tr>
<th>Clinical Services</th>
<th>No. of patients/cases</th>
<th>2015-16</th>
<th>2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screening</td>
<td></td>
<td>43969</td>
<td>45977</td>
</tr>
<tr>
<td>New OPD</td>
<td></td>
<td>40804</td>
<td>43375</td>
</tr>
<tr>
<td>Follow-ups</td>
<td></td>
<td>34172</td>
<td>34981</td>
</tr>
<tr>
<td>New Cases + Follow-ups + Special Clinics</td>
<td></td>
<td>75936</td>
<td>79756</td>
</tr>
<tr>
<td>*Admissions</td>
<td></td>
<td>3913</td>
<td>3763</td>
</tr>
<tr>
<td>Discharges</td>
<td></td>
<td>3594</td>
<td>3641</td>
</tr>
<tr>
<td>Deaths in ICU</td>
<td></td>
<td>63</td>
<td>48</td>
</tr>
<tr>
<td>Deaths in Wards</td>
<td></td>
<td>36</td>
<td>30</td>
</tr>
<tr>
<td>Average Duration of Hospital Stay</td>
<td></td>
<td>10.21 days</td>
<td>9.25 days</td>
</tr>
</tbody>
</table>

*Discrepancy between “Admissions” and “Discharges + Deaths” is due to some “Admissions” cancelled after official admission made, or some patients having left the ward against advice.

A total of 298 patients were admitted to short-stay ward for observation.
B. Emergency Services

<table>
<thead>
<tr>
<th>Emergency Services</th>
<th>No. of patients/cases</th>
<th>2015-16</th>
<th>2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration</td>
<td></td>
<td>20395</td>
<td>18814</td>
</tr>
<tr>
<td>Deaths</td>
<td></td>
<td>153</td>
<td>123</td>
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</tbody>
</table>

C. Diagnostic Services

<table>
<thead>
<tr>
<th>Facilities provided</th>
<th>No. of patients/cases</th>
<th>2015-2016</th>
<th>2016-2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital Electroencephalography (EEG)</td>
<td></td>
<td>4016</td>
<td>4364</td>
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<tr>
<td>Visual Evoked Potential (VEP)</td>
<td></td>
<td>1286</td>
<td>1197</td>
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<tr>
<td>Brain Stem Auditory Evoked Response (BAER)</td>
<td></td>
<td>1270</td>
<td>1114</td>
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<tr>
<td>Somato Sensory Evoked Potential (SSEP)</td>
<td></td>
<td>1254</td>
<td>1182</td>
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<tr>
<td>Video EEG (VEEG)</td>
<td></td>
<td>602</td>
<td>710</td>
</tr>
<tr>
<td>Polysomnography (PSG)</td>
<td></td>
<td>09</td>
<td>28</td>
</tr>
<tr>
<td>Electroneuromyography (ENMG)</td>
<td></td>
<td>1984</td>
<td>2278</td>
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<tr>
<td>Electrocorticography</td>
<td></td>
<td>50</td>
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</table>

D. Magnetoencephalography (MEG) Procedures

<table>
<thead>
<tr>
<th>Facilities provided</th>
<th>No. of patients/cases</th>
<th>2015-2016</th>
<th>2016-2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td></td>
<td>301</td>
<td>286</td>
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E. Special Clinics

<table>
<thead>
<tr>
<th>Special Clinics</th>
<th>2015-16</th>
<th>2016-17</th>
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</thead>
<tbody>
<tr>
<td>Epilepsy</td>
<td>480</td>
<td>446</td>
</tr>
<tr>
<td>Movement Disorders Clinic</td>
<td>815</td>
<td>785</td>
</tr>
<tr>
<td>Neuromuscular Disorders Clinic</td>
<td>960</td>
<td>1400</td>
</tr>
</tbody>
</table>

Epilepsy Clinic: About 30-50 patients with refractory epilepsy were seen in the Epilepsy Clinic, held on first and third Saturday of every month. Patient-centred treatment plans were developed and free drugs were distributed to deserving patients. Free legal aid services were also offered by the clinic.

Movement Disorders Clinic: The clinic is held on the first and the third Saturdays of every month and approximately 30-40 patients were seen in each OPD session. Hundreds were treated with Botulinum Toxin and DBS was also offered, during the period under review.

Neuromuscular Disorders Clinic: This is a multidisciplinary specialty clinic, conducted on fourth Saturday of every month. About 80-90 patients with various neuromuscular disorders (old and new cases) attended this clinic every month during the year under review. There have been new significant developments in the field of genetic diagnosis of these inherited disorders. More cases of Myotonic Disorders, Congenital Myasthenic Syndromes, and Duchenne Muscular Dystrophy (DMD) have been diagnosed. For the first time, next-generation sequencing for DMD has been started and interesting results have been found.

Geriatric Clinic: The clinic is conducted on Saturdays (barring second Saturday and general holidays). About 25 to 35 patients with dementias of varying aetiology as well as their caregivers are seen and managed in a multidisciplinary way.

F. Special Services

<table>
<thead>
<tr>
<th>Special Services</th>
<th>2015-16</th>
<th>2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botox injection</td>
<td>111</td>
<td>148</td>
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**NEUROSURGERY**

Clinical Services

<table>
<thead>
<tr>
<th>Clinical Services</th>
<th>No. of patients/cases</th>
<th>2015-16</th>
<th>2016-17</th>
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</thead>
<tbody>
<tr>
<td>Screening</td>
<td></td>
<td>117478</td>
<td>116984</td>
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<tr>
<td>Registration</td>
<td></td>
<td>19857</td>
<td>23570</td>
</tr>
<tr>
<td>Follow-ups</td>
<td></td>
<td>45174</td>
<td>47595</td>
</tr>
<tr>
<td>Admissions</td>
<td></td>
<td>6530</td>
<td>7113</td>
</tr>
<tr>
<td>Discharges</td>
<td></td>
<td>5749</td>
<td>6434</td>
</tr>
<tr>
<td>Deaths</td>
<td></td>
<td>668</td>
<td>615</td>
</tr>
<tr>
<td>Emergencies</td>
<td></td>
<td>18208</td>
<td>17515</td>
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</table>

OT Census

<table>
<thead>
<tr>
<th>Vascular Surgery</th>
<th>2015-16</th>
<th>2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cranial</td>
<td>357</td>
<td>336</td>
</tr>
<tr>
<td>Spinal</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Congenital Anomalies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cranial</td>
<td>20</td>
<td>37</td>
</tr>
<tr>
<td>CVI</td>
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<td>65</td>
</tr>
<tr>
<td>Spinal</td>
<td>17</td>
<td>69</td>
</tr>
<tr>
<td>Tumours</td>
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<tr>
<td>Cranial Supratentorial</td>
<td>673</td>
<td>986</td>
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<tr>
<td>Cranial Infratentorial</td>
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<td>482</td>
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<tr>
<td>Spine</td>
<td>101</td>
<td>141</td>
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<tr>
<td>Infection</td>
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<td>134</td>
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### NEUROANAESTHESIA

#### Clinical Services

<table>
<thead>
<tr>
<th>Anaesthesia Services for Neurosurgery and Neurology Departments</th>
<th>Facilities Provided</th>
<th>No. of Patients/Cases</th>
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</thead>
<tbody>
<tr>
<td>Neurocentre OT Complex Elective OTs (1 to 4)</td>
<td>1789</td>
<td>1876</td>
</tr>
<tr>
<td>Emergency OT Complex Elective OT (5)</td>
<td>-</td>
<td>406</td>
</tr>
<tr>
<td>Emergency OTs (6 &amp; 7)</td>
<td>-</td>
<td>3376</td>
</tr>
<tr>
<td>Total Surgeries in Emergency OT complex</td>
<td><strong>3490</strong></td>
<td><strong>3782</strong></td>
</tr>
<tr>
<td>Total Surgeries in Both OT Complexes</td>
<td><strong>5279</strong></td>
<td><strong>5658</strong></td>
</tr>
</tbody>
</table>

#### Intensive Care Units

<table>
<thead>
<tr>
<th>Neurocentre Complex ICUs</th>
<th>Facilities</th>
<th>No. of Patients/Cases</th>
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</thead>
<tbody>
<tr>
<td>Medical ICU</td>
<td>106</td>
<td>130</td>
</tr>
<tr>
<td>Surgical ICU</td>
<td>419</td>
<td>398</td>
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<tr>
<td>Total</td>
<td><strong>525</strong></td>
<td><strong>528</strong></td>
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</table>

### NEURO IMAGING & INTERVENTIONAL RADIOLOGY

#### Diagnostic Services

<table>
<thead>
<tr>
<th>Facilities provided</th>
<th>No. of Patients/Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routine X-ray Examinations</td>
<td><strong>33604</strong></td>
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<tr>
<td>Ultrasound Examinations</td>
<td>3600</td>
</tr>
<tr>
<td>Computed Tomography Scans</td>
<td>56651</td>
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<tr>
<td>Magnetic Resonance Imaging</td>
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<tr>
<td>Digital Subtraction Angiography</td>
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<td>SPECT CT</td>
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</tr>
<tr>
<td>MR-PET</td>
<td>22</td>
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</tbody>
</table>

Chronic Pain Management Services were provided with 42 consultations and 28 pain management interventions. These included transforaminal epidural steroid and local anesthetic injections, radiofrequency ablation for trigeminal neuralgia, targeted epidural blood patch for spontaneous intracranial hypotension, cervical subarachnoid hyaluronidase for arachnoiditis, suprascapular nerve block for frozen shoulder, regional blocks for ilio-inguinal neuralgia, meralgia paresthetica, post-herpetic neuralgia and occipital neuralgia and cross consultations for transcranial magnetic stimulation for post-stroke pain.
SPEECH PATHOLOGY & AUDIOLOGY

A. Clinical Services

<table>
<thead>
<tr>
<th>Facilities provided</th>
<th>No. of Patients/Cases 2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Therapy sessions</td>
<td>1938</td>
</tr>
<tr>
<td>Therapy patients</td>
<td>722</td>
</tr>
<tr>
<td>Patients attended Stuttering Group Therapy Sessions</td>
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</tr>
<tr>
<td>Group Therapy Sessions</td>
<td>14</td>
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B. Diagnostic Services

<table>
<thead>
<tr>
<th>Service</th>
<th>No. of Patients/Cases 2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech Language Pathology</td>
<td>3664</td>
</tr>
<tr>
<td>Audiology</td>
<td>2106</td>
</tr>
<tr>
<td>Follow-Up</td>
<td>735</td>
</tr>
</tbody>
</table>

B. Diagnostic Services

<table>
<thead>
<tr>
<th>Facilities Provided</th>
<th>No of Patients/ Cases 2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuropsychological Assessments</td>
<td>11</td>
</tr>
<tr>
<td>IQ Assessments</td>
<td>47</td>
</tr>
<tr>
<td>Social Skills Assessment</td>
<td>33</td>
</tr>
<tr>
<td>Others</td>
<td>32</td>
</tr>
<tr>
<td>Psychological Assessments (Neuropsychological/ IQ/ Social Skills Others)</td>
<td>123</td>
</tr>
</tbody>
</table>

C. Specialist Clinic Services

Stuttering Group Therapy:

The Department of Speech Pathology and Audiology continued to hold group therapy sessions on Saturdays for stutterers. Fourteen sessions were conducted in the reporting year with an average attendance of 2-5 persons per session. The group therapy aimed at building confidence, enhancing interaction with other members of the group and adopting strategies for easy flow of speech. These interactive sessions have helped persons with stuttering face the communication challenges more effectively.

III. Rehabilitation Services

PSYCHIATRIC REHABILITATION

A. Clinical Services

<table>
<thead>
<tr>
<th>Facilities</th>
<th>No of Patients/ Cases 2015-16</th>
<th>2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Day-boarders Enrolled</td>
<td>98</td>
<td>63</td>
</tr>
<tr>
<td>Day Boarders Discharged</td>
<td>100</td>
<td>58</td>
</tr>
<tr>
<td>In-patient Referrals to PRS</td>
<td>1318</td>
<td>1286</td>
</tr>
<tr>
<td>Outpatient SERWICE Consultations</td>
<td>1249</td>
<td>1093</td>
</tr>
</tbody>
</table>

In-patient Admissions Specifically for Rehabilitation Purposes | 26 | 40
In-patient Admissions Specifically for Rehabilitation Purposes in Feb and March 2017 (Sakalawara) | _ | 17
Therapeutic Interventions (including Psychotherapy, Cognitive Retraining and Social Skills Training) | 169 | 254

B. Diagnostic Services

<table>
<thead>
<tr>
<th>Facilities Provided</th>
<th>No of Patients/ Cases 2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuropsychological Assessments</td>
<td>11</td>
</tr>
<tr>
<td>IQ Assessments</td>
<td>47</td>
</tr>
<tr>
<td>Social Skills Assessment</td>
<td>33</td>
</tr>
<tr>
<td>Others</td>
<td>32</td>
</tr>
<tr>
<td>Psychological Assessments (Neuropsychological/ IQ/ Social Skills Others)</td>
<td>123</td>
</tr>
</tbody>
</table>

C. Special Clinics

Disability Certificates issued by Adult Psychiatry Units as well as the Department of Child and Adolescent Psychiatry

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Disability Certificates Issued</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Disability Certificates for Intellectual Developmental Disorders</td>
<td>680</td>
</tr>
<tr>
<td>2</td>
<td>Disability Certificates Issued for Mental Illness</td>
<td>383</td>
</tr>
<tr>
<td>3</td>
<td>Disability Certificates Issued as mental disability</td>
<td>63</td>
</tr>
<tr>
<td>4</td>
<td>Total Certificates Issued for ASD</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>Multiple Disabilities</td>
<td>3</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>1131</strong></td>
</tr>
</tbody>
</table>

Vocational Counselling and Placement

<table>
<thead>
<tr>
<th>Vocational Placement</th>
<th>No. of Patients/ Cases 2015-16</th>
<th>2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placed by PRS through direct placement, liaison with other NGOs, employment exchanges, etc.</td>
<td>5</td>
<td>20</td>
</tr>
</tbody>
</table>
A number of clients sought help for vocational rehabilitation. PRS in association with various private companies and NGOs facilitated job placements at Bangalore One, Café Coffee Day, Star Bazaar, Unnati Skill Centre, FAME India, Nithyasadhana, Delhi Freight Couriers, Enable India (special Employment Exchange), Vindhyaa InfoTech, Indian Credit Rating Agency (ICRA), Infosys, YWCA, HYVA IT solutions, Stayfit and Karnataka Cooperative Bank.

Field liaison visits to various government and non-governmental organizations were conducted on every third Thursday of the month, for collaborating, networking and enhancing the scope of academic exposure for students. The various organizations visited, during the review period, include Manasa Kendra, Thirumoorthy Foundation, Central Jail, Government Industrial Training Institute, Asha Kiran Trust, long-stay residential home for adults with intellectual developmental disorders run by KPAMRC, AMBA data entry training centre (sheltered workshop) for persons with IDD, Mahima long-stay home for persons with mental illness, Dhanyataa Gousala Ashram, Unnati Skill Centre, Spandana Nursing Home and YWCA Skills Training Centre for women.

### Engagement and Recreational Activities

<table>
<thead>
<tr>
<th>Activities</th>
<th>No of Sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic Skills Workshops</td>
<td>24 23</td>
</tr>
<tr>
<td>Recreational Activities for Patients and Caregivers</td>
<td>47 59</td>
</tr>
<tr>
<td>Music and Dance Therapy Sessions</td>
<td>51 82</td>
</tr>
<tr>
<td>Art Therapy Sessions</td>
<td>78 125</td>
</tr>
<tr>
<td>Indoor Games</td>
<td>6 84</td>
</tr>
<tr>
<td>Other Group Activities (Laughter Therapy, Health Education, Educational Program for Hospital Assistants &amp; House-Keeping Personnel, Sensory Stimulation, Self-Esteem Building, Independent Living Skills, Skill Development, Spirituality, Storytelling, Exercises, Meditation, Domestic Skills Activities, Yoga)</td>
<td>1641</td>
</tr>
<tr>
<td>Picnics for patients at Lalbagh Botanical Garden</td>
<td>2 1</td>
</tr>
<tr>
<td>Celebration of Festivals and National Holidays (Inclusive Activities)</td>
<td>5 5</td>
</tr>
<tr>
<td>Sales Counters at Workshops</td>
<td>2 3</td>
</tr>
</tbody>
</table>

As part of the World Mental Health Day celebrations, the annual Art Competition was held on 7 October 2016. Cooking Competition was held over the months of October and November 2016. PRS patients took part in exhibition activities of the various sections in PRS during International Science Day celebrations. They were also involved in the pressing of gowns for the annual convocation of NIMHANS, for which they were remunerated.

### NEUROLOGICAL REHABILITATION

#### A. Clinical Services

1) **Medical Services:**

<table>
<thead>
<tr>
<th>Consultations and ward-admissions in Department of Neuro-Rehabilitation</th>
<th>No. of Patients/ Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>New patients (cases) seen</td>
<td>2015-16  2016-17</td>
</tr>
<tr>
<td>Follow-up</td>
<td>10122 11379</td>
</tr>
<tr>
<td>Admissions</td>
<td>1288 1728</td>
</tr>
<tr>
<td>Discharges</td>
<td>217 187</td>
</tr>
<tr>
<td>Health Education Sessions</td>
<td>216 184</td>
</tr>
<tr>
<td>Classes for trainees</td>
<td>70 70</td>
</tr>
<tr>
<td>Neuro-muscular Clinic</td>
<td>420 298</td>
</tr>
<tr>
<td>Total</td>
<td>12345 13858</td>
</tr>
</tbody>
</table>

2) **Para-Medical Services (Occupational Therapy, Orthotics, Psychiatric Social Work and Clinical Psychology)**

<table>
<thead>
<tr>
<th>Services Provided by Occupational Therapy Section</th>
<th>No. of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Patients</td>
<td>2015-16 2016-17</td>
</tr>
<tr>
<td>- Follow-up sessions</td>
<td>3354 3976</td>
</tr>
<tr>
<td>- Treatment provided</td>
<td>16770 19880</td>
</tr>
<tr>
<td>ADL Sessions</td>
<td>67080 79520</td>
</tr>
<tr>
<td>- Treatment provided</td>
<td>2947 3502</td>
</tr>
<tr>
<td>- Multisensory Therapy</td>
<td>5894 7004</td>
</tr>
<tr>
<td>Neuro-muscular Clinic</td>
<td>867 994</td>
</tr>
<tr>
<td>Educational CD's sold</td>
<td>492 436</td>
</tr>
<tr>
<td>Training provided</td>
<td>2947 3502</td>
</tr>
<tr>
<td>Robot Hand Rehabilitation</td>
<td>2947 3502</td>
</tr>
<tr>
<td>Total</td>
<td>97462 115324</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Services Provided by Orthotic Section</th>
<th>No. of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of beneficiaries</td>
<td>2015-16 2016-17</td>
</tr>
<tr>
<td>No. of appliances made</td>
<td>207 181</td>
</tr>
<tr>
<td>No. of repairs and follow-ups</td>
<td>394 330</td>
</tr>
<tr>
<td>No. of repairs and follow-ups</td>
<td>09 05</td>
</tr>
</tbody>
</table>
No. of follow-ups 11 03
No. of patients from NR ward 156 136
No of patients from OPD 43 45
No of patients from ICU & other wards 8 3
No of patients benefited under CMMRF and RAN scheme 72 02

PHYSIOTHERAPY CENTRE

Clinical Services

<table>
<thead>
<tr>
<th>Facilities</th>
<th>Total No. of Patients/Treatment Sessions in 2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPD</td>
<td>6106</td>
</tr>
<tr>
<td>NDT</td>
<td>1912</td>
</tr>
<tr>
<td>Gait Lab</td>
<td>43</td>
</tr>
<tr>
<td>MD Clinic</td>
<td>452</td>
</tr>
<tr>
<td>Total</td>
<td>8513</td>
</tr>
</tbody>
</table>

Clinical Psychology

<table>
<thead>
<tr>
<th>Facilities</th>
<th>2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outpatients</td>
<td>Inpatients</td>
</tr>
<tr>
<td>Patients seen</td>
<td>10</td>
</tr>
<tr>
<td>Neuropsychological Assessment</td>
<td>10</td>
</tr>
<tr>
<td>Cognitive retraining (sessions)</td>
<td>93</td>
</tr>
</tbody>
</table>

B. Diagnostic Services

<table>
<thead>
<tr>
<th>Facilities provided</th>
<th>No. of Patients/Cases</th>
<th>2015-16</th>
<th>2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urodynamic study</td>
<td>110</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>Ultrasound guided procedures</td>
<td>-</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Educational materials (CIC brochure) given to the patients</td>
<td>46</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>Clean Intermittent Catheterization (CIC) taught to the patients</td>
<td>46</td>
<td>31</td>
<td></td>
</tr>
</tbody>
</table>

C. Specialist Clinic Services

The Department of Neurological Rehabilitation is running Neuromuscular Clinic in association with the Department of Neurology on fourth Saturday of every month. A team consisting of consultant, resident doctors and paramedical staff (occupational therapists and orthotist) is taking care of the rehabilitation needs of the patients with neuromuscular disorders. More than 400 patients benefitted from these services during the review period.

IV. Laboratory Services

NEUROCHEMISTRY

Diagnostic Services

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Total No. of Samples Analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Biochemistry Unit</td>
<td></td>
</tr>
<tr>
<td>Albumin, Serum</td>
<td>45573</td>
</tr>
<tr>
<td>Alkaline Phosphatase (ALP), Serum</td>
<td>45936</td>
</tr>
<tr>
<td>Ammonia, Plasma</td>
<td>5460</td>
</tr>
<tr>
<td>Angiotensin Converting Enzyme (ACE), Serum</td>
<td>724</td>
</tr>
<tr>
<td>aPTT*</td>
<td>9061</td>
</tr>
<tr>
<td>Abnormal Metabolites Screening, Urine</td>
<td>2588</td>
</tr>
<tr>
<td>Bence Jones Protein Screening, Urine</td>
<td>451</td>
</tr>
<tr>
<td>Bilirubin Total, Serum</td>
<td>46327</td>
</tr>
<tr>
<td>Parameters</td>
<td>Total No. of Samples Analyzed</td>
</tr>
<tr>
<td>------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td><strong>A. Lab Services - Special Test (done on research basis only)</strong></td>
<td></td>
</tr>
<tr>
<td>CSF 14-3-3 test by dot blot method</td>
<td>18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameters</th>
<th>No. of Samples Received</th>
<th>No. of Analytes Tested</th>
<th>No. of Samples Received</th>
<th>No. of Analytes Tested</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B. Metabolic Laboratory</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1. Metabolic Lab Services - Regular Tests</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screening for Inborn Errors of Metabolism by tandem mass spectrometry – Panel of amino acids and acylcarnitines (41 analytes)</td>
<td>5400</td>
<td>221400</td>
<td>5958</td>
<td>244278</td>
</tr>
<tr>
<td><strong>2. Metabolic Lab Services - Special Tests (done on research basis only)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screening for X-Adrenoleukodystrophy by LC-MS/MS – Panel of VLCFA-LPCs (4 analytes)</td>
<td>NIL</td>
<td>NIL</td>
<td>1529</td>
<td>6116</td>
</tr>
<tr>
<td>Vitamin D analysis by LC-MS/MS</td>
<td>NIL</td>
<td>NIL</td>
<td>79</td>
<td>79</td>
</tr>
<tr>
<td>Steroid hormone analysis by LC-MS/MS (4 analytes)</td>
<td>NIL</td>
<td>NIL</td>
<td>36</td>
<td>144</td>
</tr>
</tbody>
</table>
NEUROMICROBIOLOGY

Diagnostic Services

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Facilities provided</th>
<th>Total No. of Samples Analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CSF cell count</td>
<td>6483 6899</td>
</tr>
<tr>
<td>2</td>
<td>CSF cytology</td>
<td>2077 1024</td>
</tr>
<tr>
<td>3</td>
<td>CSF cultures</td>
<td>3262 3693</td>
</tr>
<tr>
<td>4</td>
<td>Pus cultures</td>
<td>161 160</td>
</tr>
<tr>
<td>5</td>
<td>Thio subculture</td>
<td>- 2896</td>
</tr>
<tr>
<td>6</td>
<td>Smears</td>
<td>- 3248</td>
</tr>
<tr>
<td>7</td>
<td>MDR GNB</td>
<td>- 07</td>
</tr>
<tr>
<td>8</td>
<td>MMTP's</td>
<td>- 5728</td>
</tr>
<tr>
<td>9</td>
<td>Routine cultures</td>
<td>8272 9141</td>
</tr>
<tr>
<td>10</td>
<td>General sensitivity</td>
<td>- 5105</td>
</tr>
<tr>
<td>11</td>
<td>GNB sensitivity</td>
<td>- 629</td>
</tr>
<tr>
<td>12</td>
<td>Staph sensitivity</td>
<td>- 1866</td>
</tr>
<tr>
<td>13</td>
<td>Higher antibiotic sensitivity</td>
<td>- 5105</td>
</tr>
<tr>
<td>14</td>
<td>Fungal cultures</td>
<td>3232 3136</td>
</tr>
<tr>
<td>15</td>
<td>AFB cultures</td>
<td>3558 3092</td>
</tr>
<tr>
<td>16</td>
<td>Serum ASLO determinations</td>
<td>97 137</td>
</tr>
<tr>
<td>17</td>
<td>CRP determinations</td>
<td>246 440</td>
</tr>
<tr>
<td>18</td>
<td>Serum widal test</td>
<td>543 631</td>
</tr>
<tr>
<td>19</td>
<td>Serum rheumatic factor test</td>
<td>2984 2612</td>
</tr>
<tr>
<td>20</td>
<td>Blood VDRL</td>
<td>3743 3673</td>
</tr>
<tr>
<td>21</td>
<td>CSF VDRL</td>
<td>2809 3237</td>
</tr>
<tr>
<td>22</td>
<td>CSF – antimycobacterial antibody test by ELISA (MTSE)</td>
<td>2303 3102</td>
</tr>
<tr>
<td>23</td>
<td>CSF - mycobacterial immune complex of IgG type</td>
<td>2303 3102</td>
</tr>
<tr>
<td>24</td>
<td>CSF - mycobacterial immune complex of IgM type</td>
<td>2303 3102</td>
</tr>
<tr>
<td>25</td>
<td>CSF - anticytisercal antibody using Antigen-B</td>
<td>2303 3102</td>
</tr>
<tr>
<td>26</td>
<td>India ink for Cryptococci</td>
<td>3060 3093</td>
</tr>
<tr>
<td>27</td>
<td>Mantoux test</td>
<td>127 230</td>
</tr>
<tr>
<td>28</td>
<td>Serum antinuclear antibody test</td>
<td>2983 2455</td>
</tr>
<tr>
<td>29</td>
<td>CSF latex agglutination test for Cryptococcal antigen</td>
<td>181 267</td>
</tr>
<tr>
<td>30</td>
<td>Serum/CSF Toxoplasma test by latex agglutination</td>
<td>34 -</td>
</tr>
<tr>
<td>31</td>
<td>Koch's spine</td>
<td>24 11</td>
</tr>
<tr>
<td>32</td>
<td>Oligoclonal band and monoclonal gammapathy:</td>
<td>375 375 658</td>
</tr>
<tr>
<td></td>
<td>IgG</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IgA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IgM</td>
<td></td>
</tr>
</tbody>
</table>

Investigations – Hospital Infections Surveillance System

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Facilities provided</th>
<th>Total No. of Samples Analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td>39</td>
<td>Blood bank sterility check - NIMHANS</td>
<td>840 13</td>
</tr>
<tr>
<td>40</td>
<td>CSSD sterility check</td>
<td>26 24</td>
</tr>
<tr>
<td>41</td>
<td>OT sterility</td>
<td>65 139</td>
</tr>
<tr>
<td>42</td>
<td>Water analysis</td>
<td>50 56</td>
</tr>
<tr>
<td>43</td>
<td>Screening of other sites: Throat, Axilla, Groin</td>
<td>104 476</td>
</tr>
<tr>
<td>44</td>
<td>MRSa screening</td>
<td>1086 409</td>
</tr>
<tr>
<td>45</td>
<td>Red Cross Blood bag sterility</td>
<td>660 47</td>
</tr>
<tr>
<td>36</td>
<td>Total</td>
<td>62937 86643</td>
</tr>
</tbody>
</table>

NEUROPATHOLOGY

A. Clinical services

Autopsies

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Facilities provided</th>
<th>Total No. of Samples Analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Clinical Autopsies</td>
<td>40 16</td>
</tr>
<tr>
<td></td>
<td>Medico Legal Autopsies</td>
<td>370 322</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>390 338</td>
</tr>
</tbody>
</table>

B. Diagnostic Services

(1) Histopathology

Number of samples received during the year 2016-17

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Particulars</th>
<th>2015 - 16</th>
<th>2016 - 17</th>
<th>2015 - 16</th>
<th>2016 - 17</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NIMHANS</td>
<td>Referrals</td>
<td>Total</td>
<td>NIMHANS</td>
<td>Referrals</td>
</tr>
<tr>
<td>1</td>
<td>Neurosurgery</td>
<td>2101</td>
<td>2683</td>
<td>4784</td>
<td>2095</td>
</tr>
<tr>
<td>2</td>
<td>Neurology</td>
<td>905</td>
<td>2428</td>
<td>3333</td>
<td>956</td>
</tr>
<tr>
<td>3</td>
<td>TOTAL</td>
<td>3006</td>
<td>5111</td>
<td>8117</td>
<td>3051</td>
</tr>
</tbody>
</table>

1. **Neurosurgery samples** include brain & spinal cord tumors, stereotactic biopsies, vascular lesions, demyelinating lesions, infections and others.

2. **Neurology samples** include Muscle biopsy (1528 samples), Nerve biopsy (1554 samples), Brain biopsy, Skin biopsy, Lip biopsy, Liver biopsy, hair and others (423 samples).
Number of tests carried out on the samples received for the period 2016-17

<table>
<thead>
<tr>
<th>Particulars</th>
<th>2016 - 17</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NIMHANS</td>
<td>Referrals</td>
<td>Total</td>
</tr>
<tr>
<td>1 Frozen</td>
<td>1044</td>
<td>1</td>
<td>1044</td>
</tr>
<tr>
<td>2 No. of sections cut</td>
<td>20926</td>
<td>29797</td>
<td>50723</td>
</tr>
<tr>
<td>3 H E</td>
<td>6993</td>
<td>9855</td>
<td>16848</td>
</tr>
<tr>
<td>4 Duplicate slides</td>
<td>700</td>
<td>300</td>
<td>1000</td>
</tr>
<tr>
<td>5 Special stains</td>
<td>3010</td>
<td>7153</td>
<td>10163</td>
</tr>
<tr>
<td>6 EHC</td>
<td>3552</td>
<td>2958</td>
<td>6510</td>
</tr>
<tr>
<td>7 IHC - Tumors</td>
<td>5334</td>
<td>9210</td>
<td>14544</td>
</tr>
<tr>
<td>8 IHC - Muscle</td>
<td>1337</td>
<td>321</td>
<td>1658</td>
</tr>
<tr>
<td>Total</td>
<td>42896</td>
<td>59594</td>
<td>102490</td>
</tr>
</tbody>
</table>

(2) Electron Microscopy

I. Lab Services - Routine Tests

<table>
<thead>
<tr>
<th>Total No. of Samples Analyzed</th>
<th>2015-16</th>
<th>2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultrastructural Studies</td>
<td>608</td>
<td>520</td>
</tr>
<tr>
<td>Diagnostic Electron Microscopy</td>
<td>246</td>
<td>178</td>
</tr>
<tr>
<td>Research</td>
<td>116</td>
<td>68</td>
</tr>
</tbody>
</table>

Number of tests carried out on the samples

<table>
<thead>
<tr>
<th>Particulars</th>
<th>2016 - 17</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NIMHANS</td>
<td>Referrals</td>
<td>Total</td>
</tr>
<tr>
<td>No. of plastic blocks prepared</td>
<td>1032</td>
<td>1025</td>
<td>2057</td>
</tr>
<tr>
<td>No. of Semithin sections cut</td>
<td>3096</td>
<td>3075</td>
<td>6171</td>
</tr>
<tr>
<td>No. of Ultrathin sections cut</td>
<td>3096</td>
<td>3075</td>
<td>6171</td>
</tr>
<tr>
<td>No. of Immuno Electron Microscopy conducted</td>
<td>10</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>6202</td>
<td>6150</td>
<td>12352</td>
</tr>
</tbody>
</table>

Summary of tests done

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Section</th>
<th>No. of Samples</th>
<th>No. of Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Histopathology</td>
<td>8797</td>
<td>102490</td>
</tr>
<tr>
<td>2</td>
<td>Electron Microscopy</td>
<td>520</td>
<td>12352</td>
</tr>
<tr>
<td>Grand Total</td>
<td></td>
<td>12352</td>
<td>114842</td>
</tr>
</tbody>
</table>

---

NEUROVIROLOGY

Diagnostic Services

<table>
<thead>
<tr>
<th>Facilities</th>
<th>No. of Samples Analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Services - Routine Tests</td>
<td>2015-16</td>
</tr>
<tr>
<td>Japanese Encephalitis</td>
<td>308</td>
</tr>
<tr>
<td>Dengue</td>
<td>243</td>
</tr>
<tr>
<td>Chikungunya</td>
<td>243</td>
</tr>
<tr>
<td>Measles</td>
<td>289</td>
</tr>
<tr>
<td>Herpes encephalitis</td>
<td>498</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>1489</td>
</tr>
<tr>
<td>Rabies</td>
<td>304</td>
</tr>
<tr>
<td>Enterovirus</td>
<td>19</td>
</tr>
<tr>
<td>Hemophilus influenza</td>
<td>-</td>
</tr>
<tr>
<td>Neisseria meningitides</td>
<td>-</td>
</tr>
<tr>
<td>Streptococcus pneumoniae</td>
<td>-</td>
</tr>
<tr>
<td>H1N1</td>
<td>802</td>
</tr>
<tr>
<td>HIV</td>
<td>4008</td>
</tr>
<tr>
<td>CD4</td>
<td>16408</td>
</tr>
<tr>
<td>Early infant diagnosis (EID)</td>
<td>2031</td>
</tr>
<tr>
<td>HIV viral load</td>
<td>1411</td>
</tr>
<tr>
<td>Lab Services - Special Tests</td>
<td>2015-16</td>
</tr>
<tr>
<td>Post Anti-Rabies vaccination RFFIT</td>
<td>-</td>
</tr>
</tbody>
</table>

NEUROPHYSIOLOGY

Diagnostic Services

<table>
<thead>
<tr>
<th>Lab Services - Routine Tests</th>
<th>No. of Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015-16</td>
<td>2016-17</td>
</tr>
<tr>
<td>Autonomic Function Test</td>
<td>1215</td>
</tr>
<tr>
<td>Pulmonary Function Test</td>
<td>307</td>
</tr>
</tbody>
</table>

TRANSFUSION MEDICINE & HAEMATOLOGY

A. Diagnostic Services

<table>
<thead>
<tr>
<th>Diagnostic/Blood Component Services of TMC</th>
<th>Facilities</th>
<th>No. of samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015-16</td>
<td>2016-17</td>
<td></td>
</tr>
<tr>
<td>ABO grouping and Rh typing</td>
<td>56557</td>
<td>59293</td>
</tr>
<tr>
<td>Haemoglobin estimation done for blood donors</td>
<td>7938</td>
<td>7954</td>
</tr>
</tbody>
</table>
### V. Supportive Services

#### NURSING

### A. Clinical Services

<table>
<thead>
<tr>
<th>Facilities</th>
<th>2015-16</th>
<th>2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute nursing care</td>
<td>10563</td>
<td>10584</td>
</tr>
<tr>
<td>Intensive nursing care</td>
<td>10781</td>
<td>10325</td>
</tr>
<tr>
<td>ECTs given</td>
<td>5243</td>
<td>7607</td>
</tr>
<tr>
<td>Emergency nursing care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neurology</td>
<td>29888</td>
<td>28948</td>
</tr>
<tr>
<td>Neurosurgery</td>
<td>26961</td>
<td>26213</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>12215</td>
<td>10512</td>
</tr>
<tr>
<td>Chronic patient care</td>
<td>19619</td>
<td>19095</td>
</tr>
<tr>
<td>No. of surgeries assisted</td>
<td>5324</td>
<td>5758</td>
</tr>
<tr>
<td>Community Mental Health Services provided</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at Sakalwara Center</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of cases (OPD)</td>
<td>3694</td>
<td>4399</td>
</tr>
<tr>
<td>Inpatients</td>
<td>51</td>
<td>66</td>
</tr>
<tr>
<td>Home visits</td>
<td>27</td>
<td>34</td>
</tr>
<tr>
<td>Extension Clinics</td>
<td>16320</td>
<td>12787</td>
</tr>
<tr>
<td>(new &amp; old cases)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSSD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of gas sterilizations done</td>
<td>600</td>
<td>595</td>
</tr>
<tr>
<td>No. of sets sterilized</td>
<td>74766</td>
<td>187788</td>
</tr>
</tbody>
</table>

### B. Diagnostic Services

<table>
<thead>
<tr>
<th>Facilities provided</th>
<th>2015-16</th>
<th>2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Samples sent to different laboratories for various investigations from: Neuro Center Wards</td>
<td>107027</td>
<td>68158</td>
</tr>
<tr>
<td>Psychiatric Wards (including Casualty and Emergency Services)</td>
<td>163298</td>
<td>216442</td>
</tr>
</tbody>
</table>

### C. Specialist Clinic Services

Various educational programmes and recreational activities for the patients were organised by the Department of Nursing during the review period (No. of health education programmes: 10325; group meetings: 3548; workshops/topic presentations/seminars attended: 66; picnics arranged for in-patients: 32; domestic skills workshops: 13; Sanjeevini Vedike programmes: 3; Caregivers support programme: Clothes were distributed to the patients of NIMHANS on the occasion of Ugadi festival by Friends of NIMHANS Trust.)

---

### Blood Donations (donors)

<table>
<thead>
<tr>
<th>Facilities</th>
<th>2015-16</th>
<th>2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood donations (donors)</td>
<td>7297</td>
<td>6841</td>
</tr>
</tbody>
</table>

### Blood and blood components prepared

<table>
<thead>
<tr>
<th>Facilities</th>
<th>2015-16</th>
<th>2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood and blood components prepared</td>
<td>18390</td>
<td>19095</td>
</tr>
</tbody>
</table>

### Blood Donation Camps attended

<table>
<thead>
<tr>
<th>Facilities</th>
<th>2015-16</th>
<th>2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Donation Camps attended</td>
<td>81</td>
<td>84</td>
</tr>
</tbody>
</table>

### Blood and blood components issued

<table>
<thead>
<tr>
<th>Facilities</th>
<th>2015-16</th>
<th>2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood and blood components issued</td>
<td>17621</td>
<td>18601</td>
</tr>
</tbody>
</table>

### Service to Other Hospitals

<table>
<thead>
<tr>
<th>Facilities</th>
<th>No. of samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood &amp; Blood Components issued to other Hospitals</td>
<td>6738 7009</td>
</tr>
</tbody>
</table>

### Diagnostic Services of Clinical Pathology

<table>
<thead>
<tr>
<th>Facilities</th>
<th>No. of samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete Blood Count</td>
<td>51746  61235</td>
</tr>
<tr>
<td>Urine Examination</td>
<td>4922   4754</td>
</tr>
<tr>
<td>Peripheral Smear</td>
<td>10030  8367</td>
</tr>
<tr>
<td>Peripheral Smear for MP</td>
<td>599    575</td>
</tr>
<tr>
<td>ESR</td>
<td>9709   9995</td>
</tr>
<tr>
<td>Absolute Eosinophil Count</td>
<td>186    190</td>
</tr>
<tr>
<td>Absolute Neutrophil Count</td>
<td>171    167</td>
</tr>
<tr>
<td>Reticulocyte Count</td>
<td>62     47</td>
</tr>
<tr>
<td>Sickling Test</td>
<td>133    139</td>
</tr>
<tr>
<td>Bone Marrow Study</td>
<td>14     16</td>
</tr>
<tr>
<td>Saline Dilution Test</td>
<td>200    298</td>
</tr>
<tr>
<td>Stool Examination</td>
<td>97     156</td>
</tr>
<tr>
<td>Prothrombin Time</td>
<td>4779   20772</td>
</tr>
<tr>
<td>Activated Partial Thromboplastin Time</td>
<td>4779  20772</td>
</tr>
<tr>
<td>Protein S</td>
<td>47     171</td>
</tr>
<tr>
<td>Protein C</td>
<td>48     171</td>
</tr>
<tr>
<td>Anti-thrombin III</td>
<td>27     156</td>
</tr>
<tr>
<td>TOTAL</td>
<td>87549  127981</td>
</tr>
</tbody>
</table>

### B. Specialist Clinic Services

#### Special Therapeutic Services

<table>
<thead>
<tr>
<th>Facilities</th>
<th>No. of patients/services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phlebotomies done for the patients</td>
<td>81  65</td>
</tr>
<tr>
<td>Small volume Plasmapheresis</td>
<td>214  490</td>
</tr>
<tr>
<td>Large volume Plasmapheresis</td>
<td>2398  2367</td>
</tr>
</tbody>
</table>
VI. Ayush Services

Ayurveda

Hospital Services

Outpatient services are offered on a regular basis at the main OPD block of NIMHANS. Patients with various neurological and psychiatric disorders are provided with specialized consultations and treatment. Number of patients treated during 2016-17 at OPD and IPD are as follows:

<table>
<thead>
<tr>
<th>New</th>
<th>Follow-Up</th>
<th>Admissions</th>
<th>Discharges</th>
</tr>
</thead>
<tbody>
<tr>
<td>3921</td>
<td>5562</td>
<td>272</td>
<td>270</td>
</tr>
</tbody>
</table>

NIMHANS INTEGRATED CENTRE FOR YOGA (NICY)

NIMHANS Integrated Centre for Yoga (NICY) was established in July 2014 to facilitate services, training and research activities related to yoga in mental health and neurosciences. The centre has a multidisciplinary working group of faculty members from various departments, who are interested in yoga and allied activities.

During 2016-17, a total of 13699 patients utilized yoga services offered by the NICY. Separate sessions were held for patients with different neuro-psychiatric disorders and caregivers by expert yoga therapists using validated yoga modules.

Additional services and facilities were developed in the year 2016-17. Some of the major developments include:

- Patient assessment/intake services at 2 pm on all working days.
- Development and validation of yoga module for Obsessive Compulsive Disorder (OCD).
- One-on-one therapy sessions for specific category of patients/research subjects.
- Weekly yoga session for staff/students on Friday morning.
- Construction of three yoga halls, two assessment rooms, and laboratory space for psycho physiological investigations.

Four editions of the quarterly newsletter, Samatvam, were brought out by NICY during 2016-17. A special issue of Samatvam covering the activities of 2nd International Day of Yoga (IDY)-2016 at NIMHANS was released in June 2016. Mass yoga session were conducted for staff and students on the 21st of every month. To mark celebrations of 2nd International Day of Yoga, week-long yoga activities were conducted at NICY. Serving Yogic Sattvik diet for staff and students at NIMHANS canteens, organizing yoga competitions for staff/students/patients and caregivers, quiz contests for staff and students of NIMHANS were some of the highlights of the celebrations. A mass yoga session was also conducted on 21st June 2016 in which nearly 900 staff and students actively took part. A number of distinguished guests from various parts of India and abroad visited the centre during the review period.

VII. Other Services

HUMAN GENETICS

A. Diagnostic Services

<table>
<thead>
<tr>
<th>Facilities</th>
<th>Total No. of Samples Analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2015-16</td>
</tr>
<tr>
<td>Lab Services - Routine Tests</td>
<td>8</td>
</tr>
<tr>
<td>Karyotyping</td>
<td>4</td>
</tr>
<tr>
<td>Lab Services - Special Tests</td>
<td></td>
</tr>
<tr>
<td>Molecular diagnosis</td>
<td>-</td>
</tr>
</tbody>
</table>

B. Special Services

Genetic counseling: The Department of Human Genetics provides genetic counselling services (online and in person) for patients and their family members with various genetic, psychiatric and neurological disorders.

During the year under review, counselling services were extended to patients with sporadic and familial brain and nervous system tumors, mental retardation, myoclonus epilepsy, progressive Parkinson's Disease, inherited neuropathy, congenital malformation syndromes like Down syndrome and other trisomies. Genetic counseling was also provided to families with balanced translocations as well as for subjects seeking premarital counseling. A total of 53 patients and their family members benefited from the genetic counseling services.

MENTAL HEALTH EDUCATION

Digital Display: A customizable digital display system has been installed at the OPD and Casualty. This system is programmed for specific content needs of the clients through a computer connected to LAN (Local Area Network) and real time data such as hospital statistics, inpatient strength, availability of beds, laboratory charges, etc. are displayed. Display contents at various outpatient waiting halls are customized to the requirement of the patients and caretakers. Digital signage display systems function between 8.30 am - 15.00 pm, barring OPD holidays.
Health Education and Teaching /Training Materials: The Department of Mental Health Education in collaboration with the Departments of Psychiatry, Neurosurgery, Nursing, Psychiatric Social Work, and Clinical Psychology developed educational/informational brochures for people with various mental and neurological disorders.

Posters on Stroke Prevention, First Aid for Mental Health Problems, Depression: Let’s Talk, etc. were designed. These posters are being used by the faculty and students of various departments to educate public and community. In addition, the department also collaborated with various clinical departments to design information materials.

Photographic and Video Services: Photographic and video request continued to show an upward trend. A total of 28344 digital images were taken of the 602 requests for digital still photography. Neurology topped with 2698 digital images from 88 requests, followed by Psychiatry for 2637 images from 55 requests, Neurosurgery with 853 images from 53 requests.

A total 22156 digital images of vital functions and administration/documentation programmes of the institute were taken. Digital images of all important events and functions were selected and provided for documentation and presented during the Institute Day. Expenditure on printing photographs has been greatly reduced with the shift from analogue to digital photography.

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Digital Images</th>
<th>Nos.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Documentation</td>
<td>22467</td>
</tr>
<tr>
<td>2.</td>
<td>Training images</td>
<td>3579</td>
</tr>
<tr>
<td>3.</td>
<td>Clinical</td>
<td>2298</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>28344</td>
</tr>
</tbody>
</table>

Videos on various mental health issues and awareness programmes (stroke and prevention, yoga for schizophrenia, depression, road safety and precautions, etc.) were developed in collaboration with different departments of the Institute.

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Video</th>
<th>Nos.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Clinical Cases</td>
<td>158</td>
</tr>
<tr>
<td>2.</td>
<td>Training</td>
<td>39</td>
</tr>
<tr>
<td>3.</td>
<td>Documentation</td>
<td>38</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>235</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Video Editing</th>
<th>Nos</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Clinical Cases</td>
<td>174</td>
</tr>
<tr>
<td>2</td>
<td>Training</td>
<td>72</td>
</tr>
<tr>
<td>3</td>
<td>Documentation</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>258</td>
</tr>
</tbody>
</table>

Digital Signage Display System at OPD (all OPD days 8.30 am - 3.00 pm)

Digital Signage Display System at Casualty and Emergency Services (8.00 am-8.00 pm, all days)

Video Clips for Digital Signage:

1. Do not stick on walls posters
2. Festival candles by Psychiatric Rehabilitation Services, NIMHANS
3. Hand washing for Kayakalp presentation
4. Celebrities speaking on Mental Health (English and Kannada)
5. Video content on celebrities speaking on Mental Health Kannada
6. Video clips on brief messages for patients and care givers – English & Kannada
7. Video clips seeking help for mental health issues from the comics prepared by White Swan Foundation

Posters, Brochures, Graphics & Illustrations:

The variety and quantum of tasks and services in graphic design has increased tremendously. Brochures on diagnostic services (CT, MRI, DSA and USG), Tab. Clozapine, Awareness on Stroke, First Aid for Mental Health Problems, Depression: Let’s Talk (theme of World Health Day 2017), etc. were designed. Design of posters on Road Traffic Accident, Tobacco Abuse, First Aid for Mental Health Problems, Addictive Drug Use: Helping Affected Individuals Overcome High-Risk Situations, Steps in Hand Washing, Depression: Let’s Talk (theme of World Health Day 2017) was also undertaken during the review period. The artists have honed their skills and have undertaken the production of increasingly complex products.
PSYCHOPHARMACOLOGY

The Department of Psychopharmacology is not involved in clinical or diagnostic services. However, the department provides guidance for the development of clinical services across the country. During the past two-three years, the department has been responsible for the spread (across the country) of the use of transcranial direct current stimulation for the treatment of drug- and ECT-refractory auditory hallucination in schizophrenia.

During 2016-17, this department conducted a series of workshops to train psychiatrists in the use of intranasal ketamine as an emergency treatment for suicidal patients, and as a resource for chronic, extensively antidepressant-refractory depression.

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Particulars</th>
<th>Nos.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Graphics, Banner/Posters</td>
<td>272</td>
</tr>
<tr>
<td>2.</td>
<td>Brochures</td>
<td>8</td>
</tr>
<tr>
<td>3.</td>
<td>Images for Manuals</td>
<td>148</td>
</tr>
<tr>
<td>4.</td>
<td>Certificates, Captions and Nameplates</td>
<td>353</td>
</tr>
<tr>
<td>5.</td>
<td>Drawings for Pamphlets</td>
<td>12</td>
</tr>
<tr>
<td>6.</td>
<td>Flip Charts</td>
<td>4</td>
</tr>
<tr>
<td>7.</td>
<td>Education Materials Issued</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Exhibition of posters conducted during World No Tobacco Day, on 31.05.2016 in OPD</td>
<td>8</td>
</tr>
<tr>
<td>9.</td>
<td>Maps of NIMHANS prepared for the Department of Psychiatry and the Engineering Section</td>
<td>2</td>
</tr>
</tbody>
</table>

Prize winning entry in the Art Competition conducted by Psychiatric Rehabilitation Services, NIMHANS.
43RD INSTITUTE DAY

NATIONAL INSTITUTE OF MENTAL HEALTH AND NEURO SCIENCES
[INSTITUTE OF NATIONAL IMPORTANCE] BANGALORE - 29

INSTITUTE DAY CELEBRATIONS
14TH FEBRUARY 2023

[Images of event celebrations and award ceremonies]
A. Postdoctoral Fellows

1. Dr. Suhas G, Addiction Medicine
2. Dr. NV Sai Sudha Gorthi, Acute Care & Emergency Psychiatry
3. Dr. M. Chandra N, Community Mental Health
4. Dr. Seeraj VS, Clinical Neurosciences & Therapeutics in Schizophrenia
5. Dr. Arul Jayendra Pradeep V, Child & Adolescent Psychiatry
6. Dr. Siddeswara BL, Child & Adolescent Psychiatry
7. Dr. Manjunath M, Neuroanaesthesia
8. Dr. Pavithra V, Neuroanaesthesia
9. Dr. Uttwar Akshay Jayant, Neuroanaesthesia
10. Dr. Megha Sharma, Neurocritical Care
11. Dr. Raghavendra K, Epilepsy
12. Dr. Manjunath M, Movement Disorder
13. Dr. Seena V, Neuromuscular Disorder
14. Dr. Maitreyi C Patil, Neurological Rehabilitation

B. Qualifications Awarded

I. PhD

Biophysics: 1
Ms. Kalyani Thakur Uttar Pradesh

Clinical Psychology: 4
Ms. Ilia Lyngksiarian Rynjiah Meghalaya
Ms. Madhurini Vallikad Karnataka
Ms. Mareena Susan Wesley Karnataka
Mr. Rajeev Joseph Michael Karnataka

Neurochemistry: 1
Ms. Madhavadas Sowmya Andhra Pradesh

Neuropathology: 1
Lt. Col. Dr. KS Rajmohan Karnataka

Neurophysiology: 1
Ms. Vrinda M Karnataka

Neurovirology: 1
Ms. Deepashri Rao Karnataka

Neurology: 1
Dr. Vikas Dhiman Chandigarh

Neurosurgery: 2
Dr. Akhil Deepika K Tamil Nadu
Dr. Arun H Shastry Karnataka

Nursing: 2
Ms. Achla Dagnya Gaikwad Maharashtra
Ms. Mythili D Tamil Nadu

Psychiatric Social Work: 2
Ms. Alphonsa George Kerala
Mr. Joseph V Philip Kerala

Psychiatry: 1
Ms. Anupa AV Kerala

II. DM (Neurology) : 10

Dr. Aruna Ramani K Tamil Nadu
Dr. Bineesh C Kerala
Dr. Chetan S Kashinkunti Karnataka
Dr. Dipesh Prakash Pimpale Maharashtra
Dr. Gunjan Kumar Bihar
Dr. A Krishnan Tamil Nadu
Dr. Neelsh Gupta Uttar Pradesh
Dr. Saraswati Nasti Karnataka
Dr. Sreevidya LK Kerala
Dr. Veeranna Mohan Gadad Karnataka

III. DM (Neuroanaesthesia): 4

Dr. Dheeraj Masapu Andhra Pradesh
Dr. Dhritimani Chakrabarti Chandigarh
Dr. Nitin M Karnataka
Dr. Vivek Rayadurg Karnataka

IV. DM (Neuroimaging & Interventional Radiology): 2

Dr. Shriram Varadharajan Maharashtra
Dr. Ullas VA Karnataka

V. MCh (Neurosurgery): 8

Dr. Abhishekh Shashidha Karnataka
Dr. Anil Kumar Rajasthan
Dr. Jadhav Anil Kisan Maharashtra
Dr. Kaku Mayur Vinaykumar Maharashtra
<table>
<thead>
<tr>
<th>MD (Psychiatry)</th>
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<tbody>
<tr>
<td>Dr. Abhijna Chanan Chattopadhyya</td>
<td>West Bengal</td>
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<tr>
<td>Dr. Anirban Gozi</td>
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<tr>
<td>Dr. Debanjan Banerjee</td>
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<td>Dr. Deepa Nathan</td>
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<tr>
<td>Dr. Dinakaran D</td>
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<tr>
<td>Dr. S.Gopinath</td>
<td>Tamil Nadu</td>
</tr>
<tr>
<td>Dr. Jayakrishnan Menon.TN</td>
<td>Kerala</td>
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<td>Dr. Karthigai Priya M</td>
<td>Tamil Nadu</td>
</tr>
<tr>
<td>Dr. Kulkarni Karishma Rajendra</td>
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<td>Dr. Linda Sherine A</td>
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<td>Dr. Machewad Nitishkumar Bapurao</td>
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<td>Dr. Mukku Shiva Shanker Reddy</td>
<td>Andhra Pradesh</td>
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<tr>
<td>Dr. Partheeban M</td>
<td>Puducherry</td>
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<tr>
<td>Dr. Pawan Arun Khadse</td>
<td>Maharashtra</td>
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<tr>
<td>Dr. Ravi Kumar Nadella</td>
<td>Andhra Pradesh</td>
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<td>Dr. Sanjay T Naik</td>
<td>Karnataka</td>
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<tr>
<td>Dr. Sreelakshmi Thanikappan</td>
<td>Kerala</td>
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<tr>
<td>Dr. Surahhi Hiwale</td>
<td>Andhra Pradesh</td>
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<td>Dr. Sushma BH</td>
<td>Andhra Pradesh</td>
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<tr>
<td>Dr. Tulika Shukla</td>
<td>Uttar Pradesh</td>
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<tr>
<td>Dr. Venkata Lakshmi Narasimha</td>
<td>Andhra Pradesh</td>
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</table>

| MPH: 4 |
| Dr. Chandan Kumar S | Karnataka |
| Dr. Jayasheela H | Karnataka |
| Dr. Mahamood Shariif | Karnataka |
| Dr. Ramesh Babu E | Karnataka |

| Diploma (Psychiatry): 9 |
| Dr. Avinash Shekhar | Karnataka |
| Dr. Chethana Kishore | Karnataka |
| Dr. Dayananda Sagar L | Karnataka |
| Dr. Kalyani BG | Karnataka |
| Dr. Kiran Basawraj Bagali | Karnataka |
| Dr. Manjunath Masali | Karnataka |
| Dr. Naveen Manohar Pai | Karnataka |
| Dr. Praveen MP | Karnataka |
| Dr. Sumati Kumatgi | Karnataka |

| Fellowship (Psychiatric Rehabilitation): 1 |
| Dr. P Soumya | Karnataka |

| MPhil (Neurophysiology): 2 |
| Mr. Gulshan Kumar | Jammu & Kashmir |
| Mr. Subhadeep Dutta Gupta | West Bengal |

| MPhil (Neurosciences): 4 |
| Mr. Ganesh S Savanur | Karnataka |
| Ms. Geetanjali | Jharkhand |
| Ms. Harshitha SM | Karnataka |
| Mr. Rahul Venugopal | Kerala |

| MPhil (Clinical Psychology): 15 |
| Ms. Aditi Gandotra | Andhra Pradesh |
| Ms. Alafia J | Karnataka |
| Ms. Apoorva Shrivastava | Madhya Pradesh |
| Ms. Asem Babina Devi | Manipur |
| Mr. Ishant Kumar | Uttar Pradesh |
| Mr. Kiran Kumar CTL | Karnataka |
| Mr. Mohit Gothwal | Rajasthan |
| Ms. Nikita Oberoi | New Delhi |
| Ms. Nupur Dhakephalkar | Maharashtra |
| Ms. Padmaja Mushahary | Assam |
| Ms. Shini VS | Kerala |
| Ms. Sindhuja Sudarshan | Karnataka |
| Ms. Swathi TP | Kerala |
| Ms. Tanya Anand | New Delhi |
| Ms. Vasudha Hande H | Karnataka |

| MPhil (Psychiatric Social Work): 20 |
| Ms. Anusha SN | Karnataka |
| Ms. Anza Thomas | Kerala |
| Mr. A Benjamın Franklin | Tamil Nadu |
| Mr. Chinnadurai P | Tamil Nadu |
| Ms. Dona Maria Chacko | Kerala |
| Ms. Febna Moorikath | Kerala |
| Ms. Geetha CV | Karnataka |
| Ms. Gopi ka.GG | Kerala |
| Mr. Hariprasad K | Kerala |
| Mr. Harshal Haridas | Kerala |
| Mr. Manjunatha S | Karnataka |
| Ms. Meera J | Kerala |
| Ms. Minu PK | Kerala |
| Mr. Murthu Kumar M | Tamil Nadu |
| Mr. M Murthukumaran | Puducherry |
| Ms. Reny Rajan | Kerala |
| Ms. Sanu Balan K | Kerala |
| Ms. Tansa KA | Karnataka |
| Ms. R Sukanya | Tamil Nadu |
| Mr. Vasava Tejas Fatesinghbhai | Gujarat |

| MSc (Psychiatric Nursing): 9 |
| Ms. Asha Vijayan NV | Tamil Nadu |
| Ms. Harshitha J | Karnataka |
| Ms. Jesna CA | Kerala |
| Ms. Jisha Jose | Kerala |
| Ms. Jiya G Panthanalil | Kerala |
C. Qualifications Awarded
In-Absentia at the 21st Convocation

I. Post-Doctoral Fellows
1. Dr. Veerappa Patil, Addiction Medicine
2. Dr. Vinutha R, Geriatric Psychiatry
3. Dr. Nandita Hazari, Obsessive Compulsive Disorder
4. Dr. Shailaja Shankar Behera, Neurocritical Care
5. Dr. Suma Rabab Ahmad, Neurocritical Care
6. Dr. C. Chitra, Neuropathology
7. Dr. Niveditha Ravindra, Neuropathology
8. Dr. Akshay Batra, Transfusion Medicine

II. PhD

Clinical Psychology: 1
Mr. Diptarup Chowdhury Kolkata

Neuropathology: 1
Ms. Pooja Shree Mishra Uttaranchal

Neurovirology: 1
Ms. Maria Thomas Kerala

Psychiatry: 1
Dr. Rakesh Balachandar Karnataka

III. DM (Neurology): 2
Dr. Deepa NA Karnataka
Dr. Vinayakumar S Mastammanavar Andhra Pradesh

IV. DM (Neuroimaging & Interventional Radiology): 1
Dr. Gorky Medhi Assam

V. MD (Psychiatry): 1
Dr. Spandana Bokka Andhra Pradesh

VI. MPhil (Clinical Psychology): 2
Mr. Gowtham A Tamil Nadu
Ms. Vasudha KG Karnataka

VII. MPhil (Psychiatric Social Work): 3
Ms. Akanksha Rani Bihar
Ms. Preeti Jajodia West Bengal
Ms. Silpa S Viswanath Kerala

D. Degrees Awarded (In-Person)
at the 3rd Graduation Day

I. BSc (Nursing): 69
Ms. Abhaya T Varghese Kerala
Ms. A Agnes Sharon Tamil Nadu
Ms. Aiswarya Jose Kerala
Ms. Aleena Jacob Kerala
Ms. Amitha Rajan Kerala
Ms. Anjali Dominic Kerala
Ms. Anju Antony Kerala
Ms. Anju Mathews Kerala
Ms. Anju Mol Stephen Kerala
Ms. Ansu Jose Kerala
Ms. Amugraha P Jose Kerala
Ms. Anumol Abraham Kerala
Ms. Anumol James Kerala
Ms. Anumol Raju Kerala
Ms. Anushapanchami KB Kerala
Ms. Athira VM Kerala
Ms. Besty George Kerala
Mr. Birudu Veeraiah Andhra Pradesh
Ms. Chandrima Debnath Tamil Nadu
Ms. Chinchu Baby Kerala
Ms. Chippy Thankachan Kerala
Ms. Deepa Rose Jacob Kerala
Ms. Delna K Devasia Kerala
Ms. M Dhanalakshmi Tamil Nadu
Ms. Dixa Amaranthi Kerala
Ms. Elvi Stephen Kerala
Ms. Fekseeba Thomas Kerala
Ms. Ginu Maria George Kerala
Ms. Halima Azmi Karnataka
Ms. Hemalatha R Karnataka
Ms. Jayanisha YP Kerala
Ms. Jeenu John Kerala
Ms. Jibina Babu Kerala
Ms. Jinchumol Joy Kerala
Ms. Jipsa K George Kerala
Ms. Jissa Anna James Kerala
Ms. Juliya John Kerala
Ms. Keerthana Vijayan Kerala
Ms. Laiby Mary Abraham Kerala
Ms. Linju P Lazar Kerala
Ms. Lisha Philip Kerala
Ms. Lissa Dona TS Kerala
Ms. Manjusha CT Kerala
Mr. M. Manoranijithan Tamil Nadu
Ms. Nancy Malawmkimi Mizoram
Ms. Nancy Tomy George Kerala

National Institute of Mental Health and Neuro Sciences
Ms. Neenu Jose  
Ms. Neenu Thomas  
Ms. Nithara Baby  
Ms. Pratapa Mercy Jyothisna  
Ms. Ramya PS  
Mr. Ranvijay Verma  
Ms. Ronymol Punnoose  
Ms. Rosha KS  
Ms. Sandhra John  
Ms. Sandra Mathew  
Ms. F.Sanghluanmawii  
Ms. Sara Shany TJ  
Ms. Saranya MM  
Ms. Shaniya Stany  
Ms. Sharol Joseph  
Ms. Sheena VJ  
Ms. Snera Issac  
Ms. Soniya Johny  
Ms. Steenamol ME  
Ms. Subeeana.CM  
Ms. S’Tamil Selvi  
Ms. Urmila Saha  
Ms. Veronica Pohtam

II. BSc (Radiography): 8
Mr. Breeson TD  
Ms. Chaithra KC  
Mr. Jafar Ali KP  
Ms. Liya John  
Ms. Manasa V  
Ms. Safvana P  
Ms. Sinimol Wilson  
Mr. Sultan Yusufi

III. BSc (Anaesthesia Technology): 5
Mr. Akhil Mohanan  
Ms. Annie P Benny  
Ms. Jeena Mathew  
Ms. Sandra Babu  
Ms. Shahan Banu A

IV. DCNT: 5
Ms. B Deena Kumari  
Mr. B Kalimuthu  
Mr. Kuppuraj P  
Ms. Seethalakshmi G  
Mr. Yallaling

V. DPN: 4
Ms. Juliet SR  
Ms. Kavitha ES

VI. DNN: 1  
Capt. Rajni Choudhary

E. Degrees Awarded (In-Absentia) at the 3rd Graduation Day

I. DPN
Ms. Archanapriya Kamajirao Khandare  
Ms. Arpana  
Ms. Mamta Waman Nandeshwar  
Ms. Minakshi Champatrapro Virutkar  
Ms. Renuka Dalal

II. DNN  
Capt. Rajani R

PhD Candidates under External Fellowships (as on 31.03.2017)

<table>
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<tr>
<th>Department</th>
<th>CSIR</th>
<th>UGC</th>
<th>ICMR</th>
<th>DST</th>
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<th>WELLCOME GRANT</th>
<th>NIMH-ANS</th>
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</table>
### F. Training Programmes

#### I. Other courses offered at NIMHANS

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Course</th>
<th>No. of Candidates Enrolled</th>
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<tbody>
<tr>
<td>1</td>
<td><strong>Neuroanaesthesia</strong></td>
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<tr>
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<td>BSc (Anaesthesia Technology)</td>
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<td></td>
<td>BSc Radiography</td>
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</table>

#### II. Capacity Building Programmes

**Biostatistical Consultation Unit (BCU)** was created with the objective of providing quality scientific output of research data by catering to the improvement of research studies. The BCU offers comprehensive statistical consultation using appropriate analytical tools. During the review period, 23 external researchers from various institutes and more than 50 researchers from NIMHANS have benefitted from these services in terms of data analysis and statistical consultation for sample size calculation, formulating research designs and interpretation of results. The CEO of JSW Foundation and Director, NIMHANS on behalf of the Department of Biostatistics signed an agreement for the research project ‘Statistical analysis of field and non-randomised sub-study on Mission against Malnutrition’. DM and MPhil students from other departments (one DM in Neuropathology, three MPhil in Neurophysiology, and four MPhil in Neurosciences students) were posted to the Department of Biostatistics on rotational basis for a period of one month for training. Two training programmes for PhD Nursing students were also conducted under the aegis of National Consortium for PhD Nursing, Indian Nursing Council (INC) at St. John’s Medical College, Bengaluru from 23-24 September 2016 and 6-10 February 2017.

**Transfusion Medicine & Haematology**

Students pursuing BSc courses in Nursing and Anesthesia at NIMHANS were imparted training in Hematology and Clinical Pathology. Postgraduate students from NIMHANS and other institutes (Padmashree Institute of MLT, Bengaluru and RIMS, Imphal, Manipur) attended training programme in Blood Banking, Haematology and Blood Transfusion at Transfusion Medicine Centre. A series of training programmes on various vital aspects of haematology, blood transfusion and blood banking was conducted for medical officers, nursing staff and lab technicians in batches throughout the period under review.

**Virtual Knowledge Network (VKN)**

Virtual Knowledge Network (VKN) is a knowledge sharing, skill building and coordinated care initiative by Centre for Addiction Medicine, Dept. of Psychiatry NIMHANS. Project ECHO, University of New Mexico Health Science Centre, USA is the...
intellectual partner and collaborator for NIMHANS ECHO tele-health sessions. The initiative has been made possible due to the financial support provided by Centre for Addiction Medicine, NIMHANS and Drug Deaddiction Program (DDAP), Ministry of Health and Family Welfare, Government of India.

The heart of the NIMHANS ECHO model is its hub-and-spoke knowledge-sharing networks, led by expert teams who use multi-point videoconferencing facilities to conduct virtual clinics with community health care providers (doctors and others). In this way, doctors, nurses, and other clinicians learn to provide excellent specialty care to patients in their own communities.

Using the ongoing weekly VKN NIMHANS ECHO model, the expert team could connect and impart training to around 1200 non-specialist doctors and counsellors working at district primary care centres, communities, college settings.

Mobile Learning (m-Learning) initiative has been launched to train counsellors at remote tobacco cessation centres in various parts of Karnataka. Growing use of mobile devices and high smartphone penetration have made the learning process easy for counsellors working in the remote districts of the state.

The expert team is involved in training, handholding and mentoring non-specialist health professionals of Bihar in the area of alcohol and drug addictions. The prime objective of this initiative is to enable health professionals to identify, intervene and provide best care in their districts. These new initiatives, based on mobile platforms, have bolstered the networking and training processes, further translating into improved patient care outcomes.

<table>
<thead>
<tr>
<th>Tele-ECHO sessions</th>
<th>Frequency</th>
<th>Reach</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addiction Mental Health</td>
<td>Weekly</td>
<td>Pan India</td>
<td>Health professionals</td>
</tr>
<tr>
<td>Women Mental Health</td>
<td>Monthly</td>
<td>Pan India</td>
<td>Health professionals</td>
</tr>
<tr>
<td>Road to Recovery (R2R)</td>
<td>Monthly</td>
<td>Pan India</td>
<td>Health professionals</td>
</tr>
<tr>
<td>Bihar Drug Addiction Treatment</td>
<td>Fortnightly</td>
<td>32 districts of Bihar</td>
<td>Districts doctors and counsellors under Bihar State Health Society</td>
</tr>
<tr>
<td>Tobacco Cessation</td>
<td>Fortnightly</td>
<td>18 districts of Karnataka</td>
<td>Non-specialist Counsellors under NTCP at District Tobacco Cessation Programme</td>
</tr>
</tbody>
</table>

VKN has come up with a virtual-mentoring model for skilled capacity and quality care in Women’s Mental Health (WMH). The programme is conducted on third Friday of every month between 2-4 pm. Each session covers a topic on women’s mental health with focus on perinatal mental health. The session includes case presentation and Didactic lecture on the topic by the perinatal psychiatry team. The topics include holistic approach to women’s mental health, premenstrual dysphoric disorder, eating disorder and body image disturbances.
Dr. Soumya Swaminathan, Director General, ICMR & Secretary, Department of Health Research, Ministry of Health & Family Welfare, Govt. of India interacting with community health professionals from various parts of the country during her visit to VKN.

Shri. Lav Agrawal, Joint Secretary, Ministry of Health & Family Welfare, Govt. of India, Mr. interacting with the VKN team.

Internal students were posted to the centre for one month during which their training was facilitated by weekly seminars and biweekly journal clubs followed by group discussions in their respective specialties. Community mental health surveys are also carried out during the period under review.

**Geriatric Mental Health**

During the year under review, the proposal for starting new training courses such as DM in Geriatric Psychiatry and Fellowship in Geriatric Mental Health Care was approved by the statutory body of the institute. The courses will begin from the next academic year. For the first time in India, a post-doctoral fellowship program in Schizophrenia has been introduced, under InSTAR (Individualised Schizophrenia Treatment And Reintegration) Academics programme, to offer intensive and specialized training in this area.

Translational Research is another important mandate of this program. The InSTAR team pursues cutting-edge clinical and neurobiological research studies examining patients with schizophrenia as well as their unaffected first-degree relatives; these research endeavours are facilitated through the Translational Psychiatry Laboratory. The overarching focus of these studies is on evaluating the systems biology interactions in schizophrenia within the translational research paradigm.

**Perinatal Psychiatry Services**

Perinatal Psychiatry Services, apart from offering clinical services, also extends training for postgraduate residents of psychiatry, psychology and psychiatric social work in clinical assessment of perinatal psychiatric syndromes, pre pregnancy counselling for women with pre-existing psychiatric illnesses and past history of postpartum psychiatric illnesses, risk assessment for infant harm and self-harm, mother infant bonding assessment and interventions, use of psychotropic medication in perinatal period and infant assessment.

It conducts regular workshops and training programmes for doctors, nurses, mental health professionals, pediatricians and obstetricians to increase awareness regarding perinatal psychiatry.

**Telemedicine Centre**

Telemedicine Centre and Community Psychiatry team of NIMHANS has launched ‘Primary Care Psychiatry Programme’, first of its kind in the

<table>
<thead>
<tr>
<th>Department</th>
<th>NIMHANS – Internal</th>
<th>External Trainees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post Graduates – in Psychiatry and Community Medicine</td>
<td>24</td>
<td>16</td>
</tr>
<tr>
<td>Nursing – DPN, MSc, BSc</td>
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<td>376</td>
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<tr>
<td>Clinical Psychology – MPhil CP</td>
<td>26</td>
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<tr>
<td>Psychiatric Social Work – MPhil PSW, MSW</td>
<td>21</td>
<td>35</td>
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<td><strong>Total</strong></td>
<td><strong>224</strong></td>
<td><strong>427</strong></td>
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</table>
country, focusing exclusively on empowering Primary Health Centre (PHC) doctors/general practitioners in treating common psychiatric disorders with the concept ‘Your patients, Your Clinic, but with New Learning.’ Termed as ‘Direct to Doctor Chamber (D2DC),’ this innovative format involves on-the-job training of PHC doctors through video-conferences.

The team, in association with the Department of Health and Family Welfare Services, Government of Karnataka, has piloted video-conference based on-the-job training for PHC doctors at Mandya district, Karnataka on Tuesdays using telemedicine set-up from February 2017. Screening, identifying and promoting first-line management of common psychiatric disorders among patients approaching primary health centres using telemedicine technology form the key objectives of the programme.

Electroconvulsive Therapy (ECT) Services
Residents, observers and trainees in various mental-health and allied disciplines from various parts of India and neighbouring countries, are regularly trained in various aspects of ECT practice at NIMHANS. Residents at the Institute also receive comprehensive training in this field. In fact, adult psychiatry units have a dedicated ECT day every week (the pre-OPD day), where in two-three junior residents and a senior resident are posted for ECT duty and supervision of the day’s work. A PDF course in Non-invasive Brain Stimulation has been started, during the review period. A national-level workshop on Non Invasive Brain Stimulation, aimed at developing manpower in this area, was also held in collaboration with Indian Psychiatric Society (IPS). Apart from the clinical services, research is also actively pursued on various aspects of ECT. Some of the studies are being conducted in active collaboration with the Department of Neuroanaesthesia, with focus on parameters such as pupillary non-reactivity during ECT seizures and effects of ischemic pre-conditioning on cognitive functions post ECT.

Clinical Psychology
ICCTCP: The Department of Clinical Psychology organized an International Conference titled ‘International Conference on Contemporary Trends in Clinical Psychology: Training, Research and Practice’ (ICCTCP) from 17-19 November 2016 at NIMHANS to commemorate 60 years of postgraduate training by the Department. The conference attracted 413 delegates from various states of India as well as delegates from abroad. The scientific program had two keynote addresses, two plenary sessions, thirteen symposia, fourteen workshops and 180 poster presentations.

BMRCL: Psychological assessment services were extended to Bangalore Metro Rail Corporation Limited (BMRCL) for the assessment of cognitive, behavioral and personality attributes of the BMRCL personnel and train drivers. A total of 289 BMRCL personnel underwent assessment. The evaluations were carried out by the Clinical Psychologists of the Department between March 2016 and December 2016. The reports of the assessments were submitted to the BMRCL.

DMHP: Three psychologists were deputed from Chhattisgarh under the District Mental Health Program (DMHP) for training. The training was for a period of three months from 29 April 2016 to 28 July 2016. Training was provided in case history taking and mental status examination, interview skills and techniques, counseling techniques and brief interventions. Application of the methods and techniques in adult and child cases, in substance abuse cases, in individuals with mental retardation, in marital and family contexts, and in community care, were taught through formal lectures, self-study assignments and clinical postings.

Karnataka State Police: Consultation was provided to the Karnataka State Police to plan a program for improving the well-being of police personnel in the state. After a series of meetings, this translated into a proposal for providing technical assistance to the state police for recruiting counsellors who could provide psychological care for indicated personnel. A three month training program for the recruited counsellors by the department was also envisaged in the proposal. The proposal was accepted and 50 posts of well-being officers (Qualification: Postgraduate Degree in Psychology), 9 posts of senior well-being officers (Qualification: MPhil in Clinical Psychology) and one post of Director were sanctioned by the State Government to implement the psychological care program for the state police (Qualification: MPhil in Clinical Psychology with PhD being a desirable qualification).
III. Training for Students from Other Institutions at NIMHANS

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Stream</th>
<th>Number of Candidates</th>
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<tr>
<td>1.1.1</td>
<td>(1) Ms. Anna Marike Kanitz, Deutschland, Berlin</td>
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<td>(2) Ms. Himadhari Sharma, Astoria, NewYork, USA</td>
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<td>1.1.3</td>
<td>(3) Mr. Puthy, Caritas-CCAMH, Chey Chuneas Referral Hospital, Cambodia</td>
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<td>2.3</td>
<td>Child &amp; Adolescent Psychiatry</td>
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<td>2.3.1</td>
<td>MD (Psychiatry)</td>
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<td>MD (Pediatrics)</td>
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<td>DM (Neurology)</td>
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<td>DPM (Psychiatry)</td>
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<td>Clinical Psychology</td>
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<td>2.5.2</td>
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<td>Others (Yoga, Health Psychology, Pediatrics)</td>
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<td>Training in Technology Addiction</td>
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<td>2.6</td>
<td>Epidemiology</td>
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<td>2.6.1</td>
<td>MPH</td>
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</table>

Human Genetics
- MD / MS: 5
- MSc (Medical Biochemistry, Biotechnology, Microbiology) and MLT: 40
- BSc / B.Tech: 2

Neuroanesthesia and Critical Care
- DM: 3
- MD / DNB: 129
- BSc: 17

Neurochemistry
- PhD: 2
- BTech: 1
- BME: 2
- MSc: 34
- BSc: 4

Neuro Imaging & Interventional Radiology
- Postings in the Department of NIIR: 137

Neurological Rehabilitation
- MD / MS (Physical Medicine & Rehabilitation): 2
- DM (Neurology): 2
- BSc/BPT/BOT: 14

Neurology
- MD: 280
- DNB: 16
- DM: 3
- MSc: 1
- DPM: 8
- BE(MEE): 5

Neuromicrobiology
- MSc: 9
- BE: 4
- MD: 36

Neuropathology
- PG Students - Neurology: 83
- PG Students - Neurosurgery: 15
- PG Students - Pathology: 141
- BSc: 5
- BE/BTech (Biotechnology): 1
- MSc Biochemistry: 4
- Post-Doctoral Scholar (Training in EM): 1
- MVSc (Training in EM): 1
- B.Sc., M.L.T (Training in EM): 6

Neurophysiology
- MSc (Biomedical Engineering): 1
- MSc (Cognitive Neurosciences): 1
- BE (Biotechnology): 7
- BTech (Biotechnology): 3
- Bio-Medical Engineering: 1
- Integrated MSc (Biological Sciences): 2
- MSc: 4
- MSc (Microbiology): 1
- MSc (Neuroscience): 3
### Research Programs

<table>
<thead>
<tr>
<th>Program</th>
<th>Students</th>
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<tbody>
<tr>
<td>Neurosurgery</td>
<td>210</td>
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<tr>
<td>Neurovirology</td>
<td>51</td>
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<tr>
<td>Nursing</td>
<td>1460</td>
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<tr>
<td>Psychiatry</td>
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<tr>
<td>Psychiatric Social Work</td>
<td>551</td>
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<tr>
<td>Psychopharmacology</td>
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<tr>
<td>Speech Pathology &amp; Audiology</td>
<td>208</td>
</tr>
<tr>
<td>Physiotherapy</td>
<td>121</td>
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</tbody>
</table>

### Student Count

- **MSc (Medical Physiology)**: 4
- **MSc (Biotechnology)**: 1
- **BSc (Neurosciences)**: 1
- **BSc**: 1

### PG Students

- **Neurosurgery**: PG Students Peripheral Training - 210

### Diagnosis of H1N1

- **MD**: 49

### MSc Nursing

- **MSc Nursing**: 581
- **PC BSc Nursing**: 17
- **BSc Nursing**: 757
- **DPN**: 10
- **GNM**: 53
- **DMHP SN**: 28
- **Staff nurses for Specialty training**: 14

### MD

- **MD**: 305
- **MBBS**: 2
- **DM (Neurology)**: 34
- **Ayurvedic**: 109
- **Homeopathy**: 42
- **Unani**: 54
- **BNYS (Yoga)**: 46
- **Diploma (Psychiatry)**: 2
- **BE/BTech/MTech Biotechnology**: 17
- **MSc (Biotechnology)**: 2

### Scientific Staff

- **Associate Professor**: 1
- **Professors**: 2
- **Chief Resident**: 1

### Psychiatric Rehabilitation

- **MD / MS**: 13
- **MSW**: 47
- **DMHP**: 4

### Psychiatric Social Work

- **Block Placement Training Programme (BPTP)**: 131
- **Orientation Visit**: 420

### Psychopathology

- **BSc (Biotechnology)**: 1
- **MPharm**: 1

### Speech Pathology & Audiology

- **MS (ENT)**: 30
- **DM/PDF-CAP**: 4
- **Bio-Medical & others**: 10

### Physiotherapy

- **BPT**: 86
- **MPT**: 12
- **Clinical Training**: 23

**GRAND TOTAL**: 4956

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**Prize winning entry in the Art Competition conducted by Psychiatric Rehabilitation Services, NIMHANS.**

[Image of a child's drawing showing two figures flying kites.]
Dr. Dinakaran D
Silver Jubilee Award for the best outgoing student in MD Psychiatry – 2016

Ms. Gopika GG
Dr. M.V. Govindaswamy Memorial Prize for scoring the highest marks in MPhil Psychiatric Social Work – 2016

Dr. Praveen MP
Dr. D.L.N. Murthy Rao Memorial Prize for the best outgoing student in Diploma in Psychiatry – 2016

Ms. Sindhuja Sudarshan
Dr. M.V. Govindaswamy Memorial Prize for scoring the highest marks in MPhil Clinical Psychology – 2016

Dr. Ullas VA
Golden Jubilee Award for best outgoing student in DM Neuroimaging & Interventional Radiology – 2016

Ms. Linsu Thomas
Dr. R.N. Moorthy Award for scoring the highest marks in M.Sc. Psychiatric Nursing – 2016

Dr. Vivek Rayadurg
Dr. Veeranna Mohan Gadad Dr. Usha Punja Award for the best outgoing student in DM Neuroanaesthesia– 2016

Dr. Kaku Mayur Vinaykumar
Silver Jubilee Award for the best outgoing student in M.Ch Neurosurgery – 2016

Ms. Subhadeep Dutta Gupta
Dr. R.N. Moorthy Award for scoring the highest marks in MPhil Neurophysiology – 2016

Dr. Veeranna Mohan Gadad
Dr. Anisya Vasanth Memorial Award for the Best Post-Graduate Resident in Neurology – 2016
Awardees at the 3rd Graduation Day

Dr. V. Sivarajan Award for having secured highest marks in ‘Microbiology’ subject of B.Sc Nursing Course during – 2012-16

Ms. Elvi Stephen

Best Out-Going Student Award for academic excellence in B.Sc Nursing Course 2012-16

Ms. Linju P Lazar

Best Out-Going Student in Diploma in Clinical Neurophysiology Technology (DCNT) Course – 2016

Mr. Yallaling

Dr. M. V. Govindaswamy & Dr. D.L.N. Murthy Rao Memorial Prize and Infosys Foundation Award For Excellence (In Cash) for Securing the Highest Marks in Post-Basic Diploma in Psychiatric/ Mental Health Nursing Examination – July 2016

Ms. Kavitha ES

Infosys Foundation Award For Excellence (In Cash) and Mukund Memorial Award (In Cash) for Securing Distinction In Post-Basic Diploma in Neuro Science Nursing Examination - July 2016

Ms. Rajni Choudhary
SCIENTIFIC PROGRAMMES ORGANISED AT NIMHANS

A. INTERNATIONAL

Child & Adolescent Psychiatry

Dr. Shekhar Seshadri, Professor and Head, International Workshop on POCSO & Child Abuse, 16 December 2016. 200 members participated.

Clinical Psychology

Dr. Jamuna Rajeswaran, Professor, International Conference on Creativity and Cognition in Art and Design, 19-21 January 2017. 300 members participated.

NIIR

Dr. AK Gupta, Professor and Head, in collaboration with Royal United Services Institute, UK, International Workshop on Radiological Safety and Security, 22 November 2016. 40 members participated.

Neurophysiology


Dr. BN Gangadhar, Director, NIMHANS and Professor of Psychiatry, Dr. TR Raju, Sr. Professor, Dr. Bindu M Kutty, Professor and Head, Dr. BS Shankaranarayana Rao, Professor, Dr. TN Sathyaprabha, Professor, Dr. Phalguni A Alladi, Senior Scientific Officer, Dr. Laxmi T Rao, Additional Professor, Dr. K Vijayalakshmi, Assistant Professor,
Dr. BN Srikumar, Assistant Professor, International Symposium on Neurodegenerative Disorders (ISND-2017), 29-30 March 2017. 200 members participated.

Neurosurgery

Dr. Dwarakanath S, Professor, 2nd International Annual Conference of the Movement Disorder Society of India, 6-8 January 2017. 600 members participated.

Nursing

Dr. Ramachandra, Professor, Dr. Sailaxmi Gandhi, Additional Professor and Head, Dr. Prasanthi Natalla, Assistant Professor, Dr. Radhakrishnan G, Assistant Professor, Dr. KN Jayanthi, Lecturer, Mrs. P Vijayalakshmi, Lecturer, Mrs. G Jothimani, Clinical Instructor, Mrs. Shamala A, Clinical Instructor, Mr. Kannan K, Clinical Instructor, Mrs. R Rajalakshmi, Clinical Instructor, Mrs. N Padmavathi, Clinical Instructor, Mrs. TS Sunita, Clinical Instructor, Mrs. Annie John P, Lecturer, 3rd International Conference of Indian Society of Psychiatry Nurses (ISPN), Theme: Rehabilitation of Persons with Mental Illness: Nurses Perspectives, 10-12 February 2017. 444 members participated.

Dr. BV Kathyayani, Professor and Principal, College of Nursing, Dr. Pratibha Swamy, Assistant Professor, (i) Moderators, Scientific Session, 3rd International Conference of Indian Society of Psychiatry Nurses (ISPN), 10-12 February 2017. 200 members participated (ii) National Science Day Exhibition, March 2017. 700 members participated.

Psychiatry

Dr. Pratima Murthy, Professor, Dr. Suresh Bada Math, Professor, International Conference on International Academy of Law and Mental Health Asia Pacific Conference 2016, 15-17 December 2016.

Psychiatric Rehabilitation

Dr. Deepak Jayarajan, Assistant Professor, Dr. Arun Kandasamy, Associate Professor of Psychiatry, 1st International Investigators Meeting of the Joint ICMR-MRC UK sponsored Project: Consortium on Vulnerability to Externalising Disorders and Addictions, 1-2 June 2016. 50 members participated.

Psychiatric Social Work

Dr. Bino Thomas, Assistant Professor, Dr. K Sekar, Professor, International Workshop on Recent Trends in Psychiatric Social Work (a) 14-15 June 2016. 6 international graduates of mental health participated (b) 4-6 July 2016. 9 international graduates of mental health participated (c) 25-27 July 2016. 14 international volunteers of mental health, SLV Global UK- Sri Lanka participated (d) 8-10 August 2016. 20 international volunteers of mental health, SLV Global UK- Sri Lanka participated (e) 5-7 September 2016. 6 international volunteers of mental health, SLV Global UK- Sri Lanka participated (f) 3-5 October 2016. 7 international volunteers of mental health, SLV Global UK- Sri Lanka participated.

Biophysics

Dr. B Padmanabhan, Professor, 2nd National Program Advisory Committee (PAC) BBMM Meeting, SERB – DST, Government of India, 29-30 August 2016. 50 members participated.

Biostatistics

Dr. K Thennarasu, Professor and Head, Dr. Mariamma Philip, Associate Professor, National Workshop on Statistical Methods in Medical Research and Introduction to SPSS, 14-16 July 2016. 60 members participated.
Dr. B Binukumar, Assistant Professor, National Workshop on Statistical Data Analysis using R Software, 20-22 October 2016. 45 members participated.

National Workshop on Statistical Methods in Behavioural Research

Dr. Shekhar Sheshadri, Professor and Head, Dr. Preeti Jacob, Assistant Professor, Child and Adolescent Psychiatry CME-2016, 5 November 2016. 220 members participated.

Child and Adolescent Psychiatry CME-2016

Child & Adolescent Psychiatry

Dr. Shekhar Sheshadri, Professor and Head, Dr. Shekhar Sheshadri, Professor and Head, (i) State Workshop on Psychological Burden of the Education System on Children, 25 June 2016. 40 members participated (ii) Regional training workshop, 18-23 July 2016. 4 members participated (iii) State Departmental Workshop for State Appointed Counselors Working with Children in Conflict with the Law, 22 June 2016. 22 members participated (iv) Workshop on Optimizing Potentials of Deprived Children Living in Slums, 16 and 23 September 2016. 4 members participated (v) Film Screening for Children, 7-9 October 2016. 660 children and 165 care givers participated (vi) Interdepartmental Workshop on Children in Conflict with the Law & JJ system, 26 October 2016. 3 members participated (vii) State Training Workshop for Parents, 30-31 January and 1 February 2017. 30 members participated (viii) National Workshop on Functional Approaches to Management of ADHD, Autism Spectrum Disorder and Intellectual Disabilities in Children, 3 March 2017. 40 members participated

Child and Adolescent Psychiatry

Dr. Mahendra P Sharma, Professor and Head, Dr. Paulomi Sudhir, Professor, Dr. M Manjula, Additional Professor, National Workshop on Mindfulness–Based Cognitive Behavioural Interventions: Applications in Clinical and Nonclinical Settings, 19-20 August 2016. 33 members participated.

Clinical Psychology

Dr. Anisha Shah, Professor, Dr. Shyam Sundar C, Retd. Professor of Psychiatry, NIMHANS, Ms. Ashwini Tadpatrikar, Clinical Psychologist, Workshop on Adult Psychotherapies: Cognitive, Emotion Focused, Psychodynamic and Constructivist Approaches, 23-24 December 2016. 9 members participated.

Dr. Anisha Shah, Professor, Dr. Thomas Kishore, Associate Professor, Dr. Roopesh BN, Associate Professor, Dr. Veena Satyanarayana,
Assistant Professor, Ms. Ashwini Tadpatrikar, Clinical Psychologist, Ms. Mitali Devgan, PhD Scholar, Mr. Naseer Ahmed, PhD Scholar, National Workshop on Counseling Skills for Working with Children, Adults and Families, 6-7 February 2017. 44 members participated.

Dr. Anisha Shah, Professor, Dr. Thomas Kishore, Associate Professor, Dr. Roopesh BN, Associate Professor, Dr. Veena Satyanarayana, Assistant Professor, Ms. Fasli Sideek, PhD Scholar, Ms. Ashwini Tadpatrikar, Clinical Psychologist, Ms. Mitali Devgan, PhD Scholar, National Workshop on Counseling Skills for Working with Children, Adults and Families, 30-31 March 2017. 47 members participated.

Dr. Uma H, Professor, NIMHANS Parent Training Videos – Parenting Young Children with Behavior Problems, 25 March 2017. 10 trainees (students, parents) and staff participated.

Dr. LN Suman, Professor, Dr. Veena AS, Assistant Professor, Dr. Ravita Jangam, Assistant Professor of Psychiatric Social Work,
(i) LIVE: Living with Vitality and Enthusiasm - A Workshop on Management of Self-Injurious Behaviours, 2 April 2016. 15 members participated 
(ii) NEWS: Negotiating Excruciating and Wounding Situations - A Workshop on Breaking Bad News, 16 July 2016. 29 members participated 
(iii) STUN: Sudden Trauma-Understanding and Nurturing - A Workshop on Psychological First Aid, 17 September 2016. 10 members participated.

Dr. LN Suman, Professor, Dr. Veena AS, Assistant Professor, WEB: Winning over Electronic Bullying - A Workshop on Overcoming Cyber Trauma, 25 February 2017. 7 members participated.

Dr. Seema Mehrotra, Professor and team, Youth Pro Workshop, 18 April 2016. 27 members participated.

Dr. Seema Mehrotra, Professor, Dr. Jyotsna, Assistant Professor and team, (i) Regional workshop on Personal Growth Series: Managing Anger & Feeling Calmer, 4 June 2016. 16 members participated 
(ii) National Workshop on Science of Happiness for Dalai Lama Interfaith Pilgrimage group, 6 June 2016. 35 members participated.

Dr. Seema Mehrotra, Professor, Dr. Jyotsna Agrawal, Assistant Professor, Ms. Janhavi Devdutt, PhD Scholar, Mr. Noufal TH, PhD Scholar, Regional workshop on Dealing with Depression: Taking Care of Self and Supporting others, 27 August 2016. 21 members participated.

Dr. Jamuna Rajeswaran, Professor, Dr. Anupam Gupta, Professor and Head of Neurological Rehabilitation, Dr. Sharan Srinivasan, MPhil in Clinical Psychology, Dr. Rajakumari P Reddy, Assistant Professor, Joint National Conference of Indian Federation of Neurorehabilitation & Neurorehabilitation Subsection of Indian Association of Neurology IFNR - 2016. 1-3 April 2016. 250 members participated.

Dr. Jamuna Rajeswaran, Additional Professor, Dr. Muralidharan Kesavan, Additional Professor of Psychiatry, 1st National Workshop on Dissociation to Deception: Forensic Neurocognitive Assessment (DD-FNA 2017), 3-4 February 2017. 27 members participated.

Dr. Paulomi M Sudhir, Professor, Dr. Mahendra P Sharma, Professor and Head, Dr. Manjula M, Additional Professor, Workshop on CBT for Obsessive Compulsive and Related Disorders, 16-17 September 2016. 30 members participated.

Dr. Paulomi M Sudhir, Professor, Dr. Janhavi Devdutt, PhD Scholar, Workshop on Works Stress and Mental Health for Air Warriors, NCWB, 19 September 2016. 6 members participated.

Dr. Paulomi M Sudhir, Professor, Mr. Noufal, PhD Scholar, Ms. Vaisny Kapur, PhD Scholar, Workshop on Works Stress and Mental Health for Air Warriors, NCWB, 5 December 2016. 9 members participated.

Dr. Manoj Kumar Sharma, Additional Professor, Dr. Nitin Anand, Assistant Professor, Dr. Gitanjali Narayanan, Assistant Professor, Workshop on Technology Addiction: Assessment and Management, 22 July 2016. 17 members participated.

Dr. Manoj Kumar Sharma, Additional Professor, Dr. LN Suman, Professor, Dr. Gitanjali Narayanan, Assistant Professor, Dr. Nitin Anand, Assistant Professor, (i) Trainer Workshop on Technology Addiction: Screening and Management, SHUT clinic, (a) 27 August 2016. 20 members participated (b) 26 November 2016. 35 members participated (c) 27 February 2017 (ii) Workshop on Technology Addiction: Assessment and Management, 3 March 2017. 16 members participated.

Dr. M Manjula, Additional Professor, Mr. Vidhyasagar, PhD Scholar, Ms. Seema Nambiar, PhD Scholar, National Workshop on Emotion Regulation for Healthy Living, NCWB, Bengaluru (a) 5 April 2016. 20 members participated (b) 23 July 2016. 26 members participated.
Annual Report 2016-2017
National Institute of Mental Health and Neuro Sciences

Dr. M Manjula, Additional Professor, Dr. Poornima Bholo, Additional Professor, Ms. Lavanya TP, PhD Scholar, Ms. Nupur, PhD Scholar, Ms. Radhika K, PhD Scholar, National Workshop on Identifying and Addressing Depression and Suicidal Behaviours in Youth, NCWB, Bengaluru, 28 May 2016. 20 members participated.

Dr. M Manjula, Additional Professor, Dr. Paulomi Sudhir, Professor, Dr. Mahendra P Sharma, Professor and Head, National Workshop on Cognitive Behaviour Therapy: Principles and Applications, 29-30 July 2016. 51 members participated.

Dr. M Manjula, Additional Professor, Ms. P Seema Nambiar, National Workshop on Maintaining Healthy Interpersonal Relationships for Youth, NCWB, Bengaluru, 19 January 2017. 14 members participated.

Dr. Poornima Bholo, Additional Professor, Dr. Ahalya Raguram, Professor, Workshop on Using Psychoanalytic Concepts in the Therapy Room, 30-31 January 2017. 60 members participated.

Dr. M Thomas Kishore, Associate Professor, Dr. Roopesh BN, Associate Professor, Dr. Nithya Poornima, Assistant Professor, National Workshop on Functional Approaches to Management of ADHD, Autism Spectrum Disorder and Intellectual Disabilities in Children, 3-4 March 2017. 50 members participated.

Dr. Nithya Poornima, Assistant Professor, Dr. Aruna Rose Mary Kapanee, Assistant Professor, Dr. Jyotsna Agrawal, Assistant Professor, Dr. Gitanjali Narayanan, Assistant Professor, Workshop on Under the Spotlight: A Theatre-based Exploration of Mental Health Issues, 12-17 January 2017. 19 members participated.

Dr. Shantala Hegde, Assistant Professor, Dr. Shivarama Varambally, Additional Professor of Psychiatry, National Symposium on Understanding Cognition and Consciousness through Music and Meditation, 8 February 2016. 115 members participated.

Dr. Shantala Hegde, Assistant Professor, Dr. Keshav Kumar J, Professor, National Workshop on Cognitive Rehabilitation for Schizophrenia: The Current Status and Future Directions, 28-29 September 2016. 15 members participated.

Dr. Shantala Hegde, Assistant Professor, Notes to Neuroscience: A One Day National Symposium on Neuromusicology, 15 March 2017. 63 members participated.

Dr. Nitin Anand, Assistant Professor, Workshop on Psychological Interventions for Personality Disorders (W-PIP), 24-25 February 2017. 49 members participated.

Dr. Gitanjali Narayanan, Assistant Professor, Dr. Arun K, Associate Professor of Psychiatry, Mr. Ashfak Ahmad, PhD Scholar, Ms. Shaima Naz, PhD Scholar, Ms. Sandhya Prabhakar, PhD Scholar, National Workshop on Building Youth Motivation for a Substance Free Life, 17 December 2016. 16 members participated.

Dr. Jyotsna, Assistant Professor, Ms. Janhavi, PhD Scholar, Mr. Noufal, PhD Scholar, Hello Assertiveness! Workshop, 4 March 2017. 26 members participated.

Epidemiology

Shri. Bhaskar Rao, ADGP, Dr. Sekar R, Registrar, NIMHANS, Dr. Gangadhar BN, Director, NIMHANS, Shri. UT Khader, Minister for Health & Family Welfare, Govt. of Karnataka, Smt. Divya Prabha Gowda, Chairman, KSSWB, Dr. Gururaj, Head of Epidemiology and other dignitaries at the inauguration of FCC Counselors Refresher-cum-Training Programme.
Dr. Girish N, Professor, Dr. Bino Thomas, Assistant Professor of Psychiatric Social Work, FCC Counselors Refresher-cum-Training Programme, 8-10 June 2016. 100 members participated.

Dr. Girish N, Professor, Dr. Senthil Amudhan, Associate Professor, Dr. Arvind BA, Assistant Professor, National Workshop on Research Methodology 2016, 15-17 December 2016. 54 members participated.

Dr. Girish N, Professor, Mental Health Program in Karnataka, 27-28 January 2017. 100 members participated.

Dr. Pradeep BS, Additional Professor, Regional Workshop on Advanced Epidemiology, 24-27 June 2016. 24 members participated.

Dr. Gautham MS, Associate Professor, Capacity Building of Industrial Medical Officer in Prevention and Management of NCDs and MSUDs (a) 25-28 October 2016. 30 members participated (b) April 2016- October 2016 (3 trainings). 95 members participated.

Dr. Monojit Debnath, Associate Professor, National Science Day programme, 28 February 2017.

Dr. KS Meena, Associate Professor, Dr. SK Chaturvedi, Professor of Psychiatry, Dr. Geeta Desai, Additional Professor, Dr. Aruna Rose Mary Kapanee, Assistant Professor, Workshop on First Aid for Mental Health Problems, 16 July 2016. 42 members participated.

Dr. KS Meena, Associate Professor, Dr. Aruna Rose Mary Kapanee, Assistant professor of Clinical Psychology, Dr. SK Chaturvedi, Professor of Psychiatry and I/c Head, Department of Mental Health Education, Interdepartmental Workshop on First Aid for Mental Health Problem, (a) 17 September 2016. 21 members participated (b) 21 January 2017. 46 members participated.

Dr. KS Meena, Associate Professor, Dr. Prasanthi Nattala, Associate Professor of Nursing, Dr. Pratima Murthy, Professor, Centre for Addiction Medicine, National Workshop on Overcoming Drug Addiction: How Can We Help? (a) 21 September 2016. 35 members participated (b) 27 January 2017. 57 members participated.

Dr. KS Meena, Associate Professor, Dr. MN Vranda, Associate Professor of Psychiatric Social Work, National Symposium on Counselors on Addressing the Mental Health Issues of Women with Domestic Violence/Intimate Partner Violence, 10 November 2016. 150 members participated.

Dr. KS Meena, Associate Professor, Dr. Aruna Rose Mary Kapanee, Assistant Professor of Clinical Psychology, Dr. Sharmitha, student trainee in Mental Health Education, Dr. Paul Raj, Lecturer and Head, Department of Psychology, Jyoti Nivas College, Bengaluru, Interdepartmental Workshop on First Aid for Mental Health Problem Series 5, 18 February 2017. 60 members participated.

Human Genetics

Dr. Monojit Debnath, Associate Professor, National Science Day programme, 28 February 2017.

Mental Health Education

Dr. KS Meena, Associate Professor, Dr. Geetha Desai, Additional Professor of Psychiatry, Dr. SK Chaturvedi, Professor of Psychiatry and I/c Head, Department of Mental Health Education, National Interdepartmental First Aid for Mental Health Problem Series 1, 16 April 2016. 28 members participated.

Dr. KS Meena, Associate Professor, Dr. SK Chaturvedi, Professor of Psychiatry, Dr. Geeta Desai, Additional Professor, Dr. Aruna Rose Mary Kapanee, Assistant Professor, Workshop on First Aid for Mental Health Problems, 16 July 2016. 42 members participated.

Dr. KS Meena, Associate Professor, Dr. Aruna Rose Mary Kapanee, Assistant professor of Clinical Psychology, Dr. SK Chaturvedi, Professor of Psychiatry and I/c Head, Department of Mental Health Education, Interdepartmental Workshop on First Aid for Mental Health Problem, (a) 17 September 2016. 21 members participated (b) 21 January 2017. 46 members participated.

Dr. KS Meena, Associate Professor, Dr. Prasanthi Nattala, Associate Professor of Nursing, Dr. Pratima Murthy, Professor, Centre for Addiction Medicine, National Workshop on Overcoming Drug Addiction: How Can We Help? (a) 21 September 2016. 35 members participated (b) 27 January 2017. 57 members participated.

Dr. KS Meena, Associate Professor, Dr. MN Vranda, Associate Professor of Psychiatric Social Work, National Symposium on Counselors on Addressing the Mental Health Issues of Women with Domestic Violence/Intimate Partner Violence, 10 November 2016. 150 members participated.

Dr. KS Meena, Associate Professor, Dr. Aruna Rose Mary Kapanee, Assistant Professor of Clinical Psychology, Dr. Sharmitha, student trainee in Mental Health Education, Dr. Paul Raj, Lecturer and Head, Department of Psychology, Jyoti Nivas College, Bengaluru, Interdepartmental Workshop on First Aid for Mental Health Problem Series 5, 18 February 2017. 60 members participated.
Dr. GS Umamaheswara Rao, Sr. Professor, Dr. M Radhakrishnan, Additional Professor, Dr. Sudhir, Associate Professor, Dr. Sonia, Assistant Professor, Dr. Rohini, Assistant Professor of Critical Care, National Trans-Cranial Doppler Workshop, 8 January 2017. 25 members participated.

### Neurochemistry

Dr. Rita Christopher, Professor and Head, Workshop on Xevo-TQD Mass Spectrometer Application Training (a) 14-16 June 2016 (b) 9-12 December 2016 (c) 10-12 January 2017. 5 members participated.

Dr. Nandakumar DN, Additional Professor, Training Programmes on (i) Operation, Daily Maintenance, Quality Control, Analysis of Samples in Bio-rad D10, 1 April 2016. 12 members participated (ii) Sample Tracking in Clinical Laboratory, 4 May 2016. 9 members participated (iii) Update of HIS and Verification of Diagnostic Reports, 3 June 2016. 9 members participated (iv) Internal and External Quality Control Evaluation, 18 July 2016. 10 members participated (v) Handling, Maintenance and Troubleshooting of Lithium Analyzer, 26 August 2016. 13 members participated (vi) Effective Use of Upgraded Software of UV-1601 PC Spectrophotometer, 17 September 2016. 11 members participated (vii) Turnaround Time Monitoring as a Key Performance Indicator of Clinical Laboratory, 6 October 2016. 9 members participated (viii) Handling, Maintenance and Trouble Shooting of Osmometer, 8 December 2016. 8 members participated (ix) Pre-examination Processes according to NABL Guidelines, 27 February 2017. 11 members participated (x) Factors Affecting Sample Quality, 27 March 2017. 11 members participated.

### Neurology

Dr. Pramod Kumar Pal, Professor and Head, Dr. Ravi Yadav, Additional Professor, World Parkinson's Disease Day event, 10 April 2016. 100 members participated.

Dr. Pramod Kumar Pal, Professor and Head, Dr. Ravi Yadav, Additional Professor, Dr. Nitish Kamble, Assistant Professor, National Pediatric Movement Disorders Update, 12 June 2016. 100 members participated.

Dr. Pramod Kumar Pal, Professor and Head, Dr. Ravi Yadav, Additional Professor, Dr. M Netravathi, Additional Professor, Dr. Nitish Kamble, Assistant Professor, 2nd Annual National Conference of the Movement Disorders Society of India (MDSICON-2017), 6-8 January 2017. 536 members participated.

Dr. P Satishchandra, Sr. Professor, Dr. Sanjib Sinha, Professor, Dr. Ravindranadh CM, Assistant Professor, Dr. Raghavendra K, Assistant Professor, National TS Srinivasan-NIMHANS Knowledge Conclave 2017 on Epilepsy: Genetics, Imaging and Surgery, 23-25 February 2017. 230 members participated.

### Neuromicrobiology

Dr. Shripad A Patil, Professor and Head, 27th National Conference of Parasitology, 25-27 April 2017. 250 members participated.

Dr. HB Veenakumari, Additional Professor, (i) Quiz Competition for Nurses and Nursing Students, Global Hand Washing Day, 15 October 2016 (ii) Training Programme on BMWM-An Update for Nurses and Group D Staff in collaboration with Maridi Eco Industries Pvt. Ltd., November 2016 (iii) Orientation Programme on Hospital Associated Infections-Prevention and Control Aspects (a) Department of Neurology, 4 March 2017 (b) Department of NIIR, 16 March 2017 (c) Department of Neurosurgery, 18 March 2017.
Neuropathology

Dr. Gayathri N, Professor, Dr. MM Srinivas Bharath, Additional Professor Neurochemistry, Dr. BK Chandrasekhar Sagar, Additional Professor, 3rd National Annual Mito Symposium 20 August 2016. 105 members participated.

Neurophysiology


Dr. BS Shankaranarayana Rao, Professor, National Neuroanatomy Workshop (in collaboration with JNCASR), 12-21 September 2016. 15 members participated.

Neuroanatomy Workshop participants and faculty from JNCASR and NIMHANS-12 September 2016

Dr. Laxmi T Rao, Additional Professor, coordinated Seminar on Needleless Drug Delivery on Vaccination Using Shockwave Techniques, by Dr. Dipshika Chakravortty, Professor, Department of Microbiology and Cell Biology, IISc, Bengaluru, 2 April 2016. 50 members participated.

Neurosurgery

Dr. Malla Bhaskara Rao, Professor and Head, Dr. Arivazhagan A, Additional Professor, coordinators, TS Srinivasan NIMHANS Knowledge Conclave 2017, 23-25 February 2017. 250 members participated.

Dr. Nupur Pruthi, Additional Professor, Dr. Anitha Mahadevan, Additional Professor of Neuropathology, Dr. S Sampath, Professor, Dr. AR Prabu Raj, Assistant Professor, 2nd NIMHANS Microvascular Anastomosis & Brain Dissection Workshop, 21-23 October 2016. 30 members participated.

Dr. Arivazhagan A, Additional Professor, Annual National Conference of Indian Society of Neuro Oncology- 2017, 10-12 March 2017. 300 members participated.

Neurovirology

Dr. Ravi Vasanthapuram, Professor, Dr. Anita Desai, Professor, Dr. Reeta Mani, Associate Professor, National Workshop and Hands – On Training in Diagnosis and Detection of Non – JE AES Pathogens, 26-28 September 2016. 16 members participated.

Dr. Ravi Vasanthapuram, Professor, Dr. Reeta Mani, Associate Professor, National WHO-APCRI Consultation on Assessing Rabies Related Programmatic Experiences in India, 20-21 December 2016. 25 members participated.
Dr. Ravi Vasanthapuram, Professor, Dr. Anita Desai, Professor, Dr. Reeta Mani, Associate Professor, Dr. Lesley (CDC), Dr. Srinivasan Velusamy (CDC), National Workshop on Bacterial Meningitis Pathogen Detection and Pneumococcal Serotyping, 13-16 February 2017. 21 members participated.

Dr. Reeta S Mani, Associate Professor, (i) National Pre-Conference CME/Workshop on Laboratory Diagnosis of Rabies, 8 July 2016. 25 members participated (ii) National Conference of the Association for Prevention and Control of Rabies in India- (APCRICON 2016), 9-10 July 2016. 650 members participated.

Nursing

Dr. Sailaxmi Gandhi, Additional Professor and Head, Dr. Chandana, Assistant Professor of Nuclear Medicine (NIIR), Workshop on Nurses & Radiation Safety (funded by Dr. Ramachandra N Moorthy Foundation for Mental Health & Neurosciences), 30 July 2016. 57 members participated.

Dr. Sailaxmi Gandhi, Additional Professor and Head, Mrs. Kaliavani, Nursing Tutor, Ms. Rosamma Chacko, Nursing Tutor, (i) Workshop on Suicide Prevention and First aid, 13 October 2016. 45 members participated (ii) Focus Group Discussions on Suicide Prevention with Family Members of Persons with Mental Illness, 13 April, 24 May, 15 June, 27 July, 25 August, 8 September, 25 October, 10 November 29 December 2016, 19 January 2017, 15 February 2017. 83 members participated.

Dr. Sailaxmi Gandhi, Additional Professor and Head, Mrs. Valsamma Mathew, Nursing Tutor, Mrs. Annies Babu, Nursing Tutor, Mrs. SEY Veena, Nursing Tutor, Mrs. Hilda PD, Nursing Tutor, Workshop on Crisis Intervention for Care Givers of Patients with Neurological and Surgical Disorder, Imparting Knowledge on PFA Action Principles Look Listen-Link for Swachhata Personnel, (a) 13 October 2016. 30 members participated (b) 14 October 2016. 50 members participated.

Dr. Sailaxmi Gandhi, Additional Professor and Head, Workshop on Aggression Management for Caregivers of Persons with Mental Illness, 13 October 2016. 47 members participated.

Dr. G Radhakrishnan, Assistant Professor, Sanjeevini Vedike/ Caregivers Support and Education Programme, 23 August 2016. 50 members participated.

Dr. Prasanthi Nattala, Associate Professor, Dr. KS Meena, Associate Professor of Mental Health Education, Dr. Pratima Murthy, Professor of Psychiatry, Workshop on Overcoming Drug Addiction: How Can We Help Affected Individuals? (a) 21 September 2016. 45 members participated (b) 27 January 2017. 48 members participated.

Psychiatry

Dr. Prabha S Chandra, Professor and Head, Dr. SK Chaturvedi, Professor, A Bouquet of Teaching Method - Workshop on Pedagogy, 22-24 December 2016. 45 members participated.

Dr. Sanjeev Jain, Professor, Dr. Pratima Murthy, Professor, Symposium on History of Psychiatry, 28 February 2017.
Dr. Sanjeev Jain, Professor, Public Symposium on the Madhouse on the Landscape of the City: The Relevance of the Mental Hospital-Moving from History to the Present Date, NIMHANS, 20 May 2016. 100 members participated.

Dr. Sanjeev Jain, Professor, Dr. Pratima Murthy, Professor, Dr. Pradipto Roy, Ms. Sarah Ghani, Symposium on History of Psychiatry in India, 15-16 June 2016. 55 members participated.

Dr. Pratima Murthy, Professor, Dr. Geetha Desai, Additional Professor, Dr. Sundarnag G, Assistant Professor, Symposium on Psychotherapy, 20 October 2016. 40 members participated.

Dr. Pratima Murthy, Professor, Dr. Prabhat Kumar Chand, Additional Professor, National CME on Addiction – 2016, 6-7 December 2016. 235 members participated.

Dr. Muralidharan K, Additional Professor, Dr. YC Janardhan Reddy, Professor, Dr. Sanjeev Jain, Professor, Dr. G Venkata Subramanian, Professor, Dr. Biju Viswanath, Assistant Professor, Dr. Sydneer Moirangtham, Associate Professor, World Bipolar Day 2016 event, 3 April 2016. 70 members participated.

Dr. Vivek Benegal, Professor, Dr. Pratima Murthy, Professor, Dr. Deepak J, Assistant Professor, Psychiatric Rehabilitation, Dr. U Sahayaraj, Cohort Manager of De-addiction, ICMR – MRC UK Collaborative Project: Consortium on Vulnerability to Externalizing Disorders and Addictions First Investigators Meeting, 1-2 June 2016. 48 members participated.

Dr. Jagadisha T, Professor, Dr. Sivakumar T, Associate Professor of Psychiatric Rehabilitation, Workshop on Green Skilling Project: Empowering Persons with Psychiatric Disabilities, 20 September 2016. 48 members participated.

Dr. Jagadisha, Professor of Psychiatry, Dr. N Shivashankar, Professor of Speech Pathology and Audiology, Dr. K John Vijay Sagar, Additional Professor of Child and Adolescence Psychiatry, Dr. Devvarta Kumar, Additional Professor of Clinical Psychology, Dr. Poornima Bhola, Additional Professor of Clinical Psychology, Dr. M Thomas Kishore, Associate Professor of Clinical Psychology, Dr. Rashmi Krishnan UK, Dr. Radhakrishnan, Additional Professor of Neuroanaesthesia and Critical Care, Dr. Ameer Hamza, Additional Professor of Psychiatric Social Work, Dr. Nirmala BP, Additional Professor of Psychiatric Social Work, Dr. N Janardhana, Additional Professor of Psychiatric Social Work, Dr. Aarti Jagannathan, Assistant Professor of Psychiatric Social Work, Dr. Krishna Prasad M, Associate Professor, Dr. Sivakumar T, Associate Professor, Dr. A Hareesh, Assistant Professor, Dr. Deepak Jayarajan, Assistant Professor, and team from Seva-in-Action, National Seminar on Emerging Trends in Inclusion and Habilitation of People with Intellectual & Developmental Disabilities, 14 December 2016. 250 members participated.
Dr. Sivakumar T, Associate Professor, Dr. Padmavati R, and team from Schizophrenia Research Foundation (SCARF), Chennai, Workshop on Evolution of Indian Disability Evaluation Assessment Scale (IDEAS), National Virtual Knowledge Network NIMHANS ECHO: Road to Recovery (R2R), 22 April 2016. 10 members participated.

Dr. Sivakumar T, Associate Professor, Dr. Devvarta Kumar, Additional Professor of Clinical Psychology, Ms. Manila Mathews, Clinical Psychologist, Workshop on Cognitive Remediation in Persons with Schizophrenia, National Virtual Knowledge Network NIMHANS ECHO: Road to Recovery (R2R), 24 June 2016. 10 members participated.

Dr. Sivakumar T, Associate Professor, Dr. PT Sivakumar, Additional Professor of Psychiatry, Dr. Soumya Hegde, Associate Director, Nightingales Centre for Ageing and Alzheimer's (NCAA), Workshop on Rehabilitation in Geriatric Psychiatry, National Virtual Knowledge Network NIMHANS ECHO: Road to Recovery (R2R), 29 July 2016. 10 members participated.

Dr. Sivakumar T, Associate Professor, Dr. Kalyanasundaram, Consultant psychiatrist & Hon. CEO, Richmond Fellowship Society, Bengaluru Branch, Workshop on Rehabilitation in Private Practice, National Virtual Knowledge Network NIMHANS ECHO: Road to Recovery (R2R), 26 August 2016. 10 members participated.

Dr. Krishna Prasad M, Associate Professor, Dr. Ganesh Joshi, Assistant Professor of Physical Medicine & Rehabilitation and Officer In-charge, CRC, Bhopal, Ms. Manila Mathews, Clinical Psychologist, PRS, NIMHANS, Workshop on Experiences in Rehabilitation from a Composite Regional Center, National Virtual Knowledge Network NIMHANS ECHO: Road to Recovery (R2R), 25 November 2016. 20 members participated.

Dr. A Hareesh, Assistant Professor, Dr. Sivakumar T, Associate Professor, Dr. Deepak Jayarajan, Assistant Professor, Dr. Krishna Prasad, Associate Professor, Dr. Suresh Bada Math, Professor, Dr. C Naveen Kumar, Additional Professor, Dr. Jagadisha Thirthalli, Professor, Dr. Aarti Jagannathan, Assistant Professor of Psychiatric Social Work, National-level Expert Consensus Meet on Disability due to Mental illness and Future Directions, 20 August 2016. 48 members participated.

Dr. A Hareesh, Assistant Professor, Dr. Arun R, CMC, Vellore, Dr. Anna Tharyan, CMC, Vellore, Psychiatric Rehabilitation Services, CMC, Vellore, Workshop on Lessons and Challenges, National Virtual Knowledge Network NIMHANS ECHO: Road to Recovery (R2R), 27 January 2017. 21 members participated.

Dr. Deepak Jayarajan, Assistant Professor, Dr. Sudipto Chatterjee, Consultant Psychiatrist, Parivartan Trust, Maharashtra, Mrs. Shamika Bapat, Counselling Psychologist, Parivartan Trust, Mrs. Jai Adawadkar, Clinical Psychologist, Parivartan Trust, Dr. Amit Nulkar, Consultant Psychiatrist, Parivartan Trust, Workshop on Approach to Vocational Rehabilitation in the INCENSE / THRIVE Project and the Lessons Learnt, National Virtual Knowledge Network NIMHANS ECHO: Road to Recovery (R2R), 24 March 2017. 14 members participated.

Dr. Deepak Jayarajan, Assistant Professor, PRS, NIMHANS, Dr. Abel Thamby, Junior Resident, Workshop on Harm Reduction Approaches in Substance Use, National Virtual Knowledge Network NIMHANS ECHO: Road to Recovery (R2R), 23 September 2016. 10 members participated.

Dr. Aarti Jagannathan, Assistant Professor of Psychiatric Social Work, Dr. Rajani P, Deputy Director, Mental Health, Government of Karnataka, Dr. Girish Kumar DP, Psychiatrist, DMHP, Bangalore Rural, Workshop on Essentials of Working in a Multidisciplinary Team in a Community Setting, National Virtual Knowledge Network NIMHANS ECHO: Road to Recovery (R2R), 28 October 2016. 16 members participated.

Dr. Anisha Shah, Professor of Clinical Psychology, Group Session on Orientation to Marital Enrichment Services, 14 June 2016. 4 members participated.

Dr. Paulomi M Sudhir, Professor of Clinical Psychology, Mr. Noufel, PhD Scholar of Clinical Psychology, Ms. Padmavathy D, Staff Nurse, Workshop on Work Stress & Mental Health for Command Hospital Air Force Base, 19 September 2016. 6 members participated.

Dr. Paulomi Sudhir, Professor of Clinical Psychology, Workshop on Work Stress & Mental Health for Air Warriors from Command Hospital Air Force Base, 5 December 2016. 9 members participated.

Dr. Senthil Kumar Reddy, Additional Professor of Psychiatry. Dr. Krishnaprasad, Associate Professor of Psychiatry, Ms. Padmavathy, Staff Nurse, Mr. Ragesh, Junior Consultant in PSW and Ph.D Scholar, Gatekeeper Training in Suicide Prevention, 15 March 2017. 8 members participated.

Dr. Manoj Kumar Sharma, Additional Professor of Clinical Psychology, Trainer Workshop for Teachers: Management of Technology Addiction among School Kids, 22 July 2016. 26 members participated.
Dr. Krishanprasad, Associate Professor of Psychiatry, Ms. Padmavathy D, Staff Nurse, Mr. Ragesh, Junior Consultant in PSW and PhD Scholar, Gatekeeper Training in Suicide Prevention, 19 May 2016. 29 members participated.

Dr. Aravind Raj E, Associate Professor of Psychiatric Social Work, (i) Training for Well Being Volunteers (a) 15 October 2016. 28 members participated (b) 5 November 2016. 19 members participated (c) 19 November 2016. 19 members participated (d) 26 November 2016. 14 members participated (e) 3 December 2016. 17 members participated (f) 17 December 2016. 18 members participated.

Dr. Bino Thomas, Assistant Professor of Psychiatric Social Work and NCWB Team, Workshop on Identifying Problems in Adolescents, 7 May 2016.

Dr. Kavitha Jangam, Assistant Professor of Psychiatric Social Work, Workshop on Responding to Child Sexual Abuse: Role of Counselors, 3 September 2016. 39 members participated.

Ms. Padmavathy D, Staff Nurse, (i) Orientation to NCWB Services for Nursing Students from Goa, 13 May 2016. 6 members participated (ii) Orientation program to NCWB Services for Psychology Students of SLV, Sri Lanka (a) 6 September 2016. 17 members participated (b) 3 October 2016. 9 members participated (iii) Gatekeeper Training in Suicide Prevention for Well Being Volunteers, 22 October 2016. 28 members participated (iv) Orientation to NCWB Services for Home Science College Students, 6 March 2017. 14 members participated (v) Orientation to NCWB Services for MSc Psychiatric Nursing Students, NIMHANS, 17 March 2017. 6 members participated.

Psychiatric Social Work

Dr. D Muralidhar, Professor and Head, coordinated Regional Lecture on Solution Focused Intervention in Conjugal Relationship, by Prof. Peter Sundman, Finland, 21 December 2016. 100 members participated.

Dr. D Muralidhar, Professor and Head, Dr. Thirumoorthy, Professor, Dr. Nirmala, Additional Professor, Dr. Kavitha Jangam, Assistant Professor, State Symposium covering three topics on (a) Sustainable Social Work Education Models, (b) Expanding Horizons of Social Work Practice, (c) Sustainable Community Based Programs, on the occasion of World Social Work Day Celebration, 21 March 2017. 100 members participated.

Dr. A Thirumoorthy, Professor, National Workshop on Solution Focused Therapy, 28-29 February 2017. 39 members participated.

Dr. BP Nirmala, Additional Professor, National Sensitization Programme on Psychiatry Social Work Practice in Mental Health and Neurological Settings, 27 May 2016. 49 members participated.

Dr. BP Nirmala, Additional Professor, Dr. MN Vranda, Associate Professor, Dr. Kanmani, Assistant Professor, Regional Workshop on Nurturing Mental Health of Women Caregivers, 17 March 2017. 32 members participated.

Dr. N Janardhana, Additional Professor, (i) National Counselling Training for the Community-Based Rehabilitation Workers, 16 December 2016. 18 members participated (ii) National Workshop on Community-based and Family Interventions for the Basic Needs India Partners, 17 January 2017. 27 members participated (iii) State Workshop on Mental Health and Community-based Rehabilitation, 27 February- 3 March 2017. 21 members participated.

Dr. Shivarama Varambally, Additional Professor of Psychiatry, Dr. Aarti Jagannathan, Assistant Professor, (i) Workshop on OM Meditation: Clinical and Research Aspects (OMCARA), 26 June 2016. 125 members participated (ii) National Virtual Knowledge Network Programme on Essentials of Working in a Multidisciplinary team in a Community Setting, 28 October 2016. 18 members participated.

Dr. Ameer Hamza, Additional Professor, Dr. Janardhana, Additional Professor, Dr. D Muralidhar, Professor and Head, Dr. Aarti Jagannathan, Assistant Professor, Dr. Kanmani, Assistant Professor, Dr. Vranda MN, Associate Professor, Dr. Anish Cherian, Assistant Professor, National Workshop on Promoting Environment and Community Sustenance in Mental Health, Virtual Knowledge Network Programme for Social Work Professionals, 21 March 2017. 33 members participated.

Dr. MN Vranda, Associate Professor, National Workshop on Promotion of Mental Health and Psychological Well-being of Adolescents in Schools using Life Skills Approach, 24-26 October 2016. 49 members participated.

Dr. Kanmani, Assistant Professor, State Training Workshop on Skill Building for Lay Counsellors, 15-16 December 2016. 20 members participated.

Dr. Priya Treesa Thomas, Assistant Professor, Dr. D Muralidhar, Professor and Head, State Workshop on Recent Trends in Psychiatric Social Work, 28-30 November 2016. 14 members participated.

Dr. Jayakumar C, Assistant Professor, Dr. Aravind Raj, Associate Professor, Dr. Sekar, Professor, National Workshop on Psychosocial Care in Disaster Management, (a) 5-9 January 2017. 30 members participated (b) 19-23 January 2017. 35 members participated (c) 20-
24 February 2017. 35 members participated (d) 6 March 2017. 30 members participated.

Dr. Kavita Jangam, Assistant Professor, Dr. Preethi Jacob, Assistant Professor of Child and Adolescent Psychiatry, Workshop on Responding to Child Sexual Abuse: Role of Counsellors, NCWB, (a) 30 September 2016. 35 members participated (b) 15 October 2016. 30 members participated.

Dr. E Aravind Raj, Associate Professor, Dr. R Dhanasekara Pandian, Additional Professor, Mr. Soyuz John, PhD Scholar, Workshop on Healthy Lifestyle for Schoolchildren, 15 December 2016. 60 members participated.

Dr. E Aravind Raj, Associate Professor, (i) Workshop on Capacity Building for NGO Staff on Management of Persons with Mental Illness in Rehabilitation Homes, 6 April 2016. 16 members participated (ii) Workshop on Psychosocial Care in Disaster Management, 23-28 May 2016. 16 members participated (iii) TOT workshop on Life Skills Education Program, 1-5 August 2016. 14 members participated (iv) Workshop on Psychosocial Competencies for Persons in Difficult Circumstances, 16-18 September 2016. 11 members participated (v) Workshop on Community-based Psychosocial Disaster Preparedness (a) I Batch, 22-24 September 2016. 37 members participated (b) II Batch, 4-6 October 2016. 33 members participated (c) III Batch, 13-15 October 2016. 34 members participated (d) IV Batch, 17-19 October 2016. 43 members participated (e) V Batch, 25-27 October 2016. 35 members participated (vi) Workshop on Psychosocial Care in Disaster Management, NIMHANS- EMR, DGHS (MoH&FW, Govt. of India) (a) I batch (West), 5-9 January 2017. 17 members participated (b) II batch (North), 19-23 January 2017. 26 members participated (c) III batch (South), 20-24 February 2017. 28 members participated (d) IV batch (East & North East), 6-10 March 2017. 24 members participated (vii) Training Program for Higher Secondary School Teachers, 30 March- 2 April 2016 (viii) Workshop on Capacity Building for NGO Staff on Management of Persons with Mental Illness in Rehabilitation Homes, 6 April 2016 (ix) Induction Program for the First Year MPhil Trainees, 14-23 September 2016. 25 members participated.

Transfusion Medicine & Haematology

Dr. Sundar Periyavan, Professor and Head, State workshop on NHM Sponsored Induction Training for Blood Storage Centers, (a) 14- 23 November 2016. 25 Medical Officers participated (b) 24 November-13 December 2016. 33 Lab Technicians (Batch I) participated (c) 14 December 2016- 2 January 2017. 35 Lab Technicians (Batch II) participated (d) 3-22 January 2017. 32 Lab Technicians (Batch III) participated (e) 23 January- 11 February 2017. 43 Lab Technicians (Batch IV) participated.

SCIENTIFIC PROGRAMMES ORGANISED OUTSIDE NIMHANS

A. INTERNATIONAL

Clinical Psychology

Dr. M Manjula, Additional Professor, Mr. Vidhya Sagar K, PhD Scholar, Workshop on Emotion Regulation Therapy to Address Emotional Dysregulation in Anxiety and Depression, International Conference on Cognitive Behavioural Interventions- 2017, AIIMS, New Delhi, 5 March 2017. 25 members participated.

Neurology


Psychiatry

Dr. Sanjeev Jain, Professor, Dr. Mani Ramaswami, Department of Genetics, Trinity College Dublin and team, Genomics Research
and Applications International Symposium on Neuroscience, India-Ireland, Trinity College, Dublin, 21-23 April 2016. 40 members participated.

**Psychiatric Rehabilitation**

Dr. Thirthalli J, Professor, Dr. Sivakumar T, Associate Professor, along with Dr. Sridevi Kalidindi, Consultant Psychiatrist in Rehabilitation & Recovery, Trust Clinical Lead for South East London STP & Clinical Liaison Lead for Performance & Contracts, South London & Maudsley NHS FT, Visiting Senior Clinical Lecturer IOPPN, Chair, Rehabilitation & Social Psychiatry Faculty, Royal College of Psychiatrists, International Workshop on Establishing and Maintaining Quality and Standards in Rehabilitation Services, 22nd World Congress of Social Psychiatry, New Delhi, 1 December 2016.

Dr. Sivakumar T, Associate Professor, Dr. Manoj Kumar T, Clinical Director & Managing Trustee, Mental Health Action Trust, Calicut, C Ramasubramanian, Founder, MS Chellamuthu Trust & Research Foundation, Madurai; State Nodal officer, Mental Health Programme, Foundation, Madurai; State Nodal officer, Mental Health Programme, Tamil Nadu, International Symposium on Community Based Rehabilitation for Persons with Mental Illness: Practical Experience from India, 22nd World Congress of Social Psychiatry, New Delhi, 2 December 2016.

**Psychiatric Social Work**

Dr. D Muralidhar, Professor and Head, International Conference on Integration of Human Rights Based Approaches in Health Care Practices, School of Social Work, Roshni Nilaya, Mangaluru, 2-4 March 2017. 200 members participated.

Dr. Rameela Sekar, Professor, Roshni Nilaya, Dr. Anish V Cherian, Assistant Professor, Mrs. Shylaja Santosh, Assistant Professor, Roshni Nilaya College, International Conference on Integration of Human Rights Based Approaches in Health Care Practices, Roshni Nilaya, Mangaluru, 2-4 March 2017. 200 members participated.

**Child & Adolescent Psychiatry**


Dr. B Binukumar, Assistant Professor, Mr. Ravi GS, Computer Programmer, National Workshop on SPSS Training for Data Analysis in Research for Medical Professionals, SPSS South Asia Pvt. Ltd., MGM Medical College, Mumbai, 26-27 September 2016. 40 members participated.

**Biostatistics**

Dr. K Thennarasu, Professor and Head, Dr. Jashobanta Mahapatra, Professor and Head of Clinical Psychology, SCB Medical college, Mental Health Institute, Cuttack, National Workshop on Statistics and Research Methodology, Central Mental Health Institute, Cuttack, Odisha, 29 March-2 April 2016. 20 members participated.
Andhra Pradesh, 14-16 March 2017. 32 members participated (xxiii) Regional Distance Learning Seminar Series on Screening for Mental Health in Children living with HIV, Indira Gandhi Institute of Child Mental Health, Bengaluru, 17 March 2017. 100 members participated (xxiv) Panel Discussions on Psychosocial Perspectives on Storytelling as a Medium of Learning of Pre-schoolers, VHD Central Institute of Home Science, Bengaluru, 21 March 2017. 50 members participated (xxv) Training Workshop for BOCSO Appointed Counselors on Child Psychosocial Care for Children in Difficult Circumstances, Yuvodaya, Bengaluru, 22 March 2017. 22 members participated.

Dr. Shoba Srinath, Sr. Professor, Session on Child Mental Health, Bhavan's Bangalore Press School, Bengaluru, 17 December 2016. 50 members participated.

Dr. Satish Girimaji, Professor, Session on Planning for Life of Persons with Special Needs, Shristi Special Academy, Bengaluru, 6 January 2017. 70 members participated.

Dr. Preeti Jacob, Assistant Professor, (i) Sessions on Child Psychology Sessions Child welfare rehabilitation & Juvenile Law, Maharashtra Judicial Academy, Uttan, Mumbai, 6 August 2016. 50 members participated (ii) Training Programme on Children in Conflict with the Law, Maharashtra Judicial Academy, Uttan, Mumbai, 28 August 2016. 60 members participated (iii) Consultation on the Development of Training Modules on Child Rights and Child Psychology for Judicial officers, WBNUJS, Kolkata, West Bengal, 17-18 November 2016. 15 members participated (iv) Session on Planning for Life of Persons with Special Needs, Sensitization on Protection of Children from Sexual Offences Act (POCSO) and Juvenile law, Maharashtra Judicial Academy, Mumbai, 28 January 2017. 80 members participated (v) State Child Development & Forensic Interview Methodology, Karnataka Police Academy, Mysuru, 20 February 2017. 80 members participated.

Dr. Preeti Jacob, Assistant Professor, Dr. Mahendra P Sharma, Professor and Head of Clinical Psychology, Regional Workshop on Mindfulness Integrated Cognitive Therapy in Adolescents with OCD, 41st Annual Conference of the Indian Psychiatric Society-North Zone (IPS-NZ) Udaipur, Rajasthan, 22-23 October 2016. 30 members participated.


Dr. Anisha Shah, Professor, Dr. Shashi Rai, Secretary, Nav Uday Mansik Swasthya Sansthan, Lucknow, Workshop on Family Therapy, 3 August 2016. 55 members participated.

Dr. Jamuna Rajeswaran, Professor, Dr. Shantala Hegde, Assistant Professor, Pre-conference Workshop, National Annual Conference of Indian Association of Clinical Psychology 2017 on Recent Trends in Neuropsychological Assessment and Rehabilitation, Kovai Vidyashram, Coimbatore, 26 January 2017. 30 members participated.

Dr. Seema Mehrotra, Professor, Dr. Jyotsna Agrawal, Assistant Professor, Ms. Janhavi Devdutt, PhD Scholar, Mr. Noufal TH, PhD Scholar, (i) Youth Pro Workshop, (a) Bishop Cotton Womens’ College, Bengaluru, 19 August 2016. 20 members participated (b) Acharya & B.M. Reddy College of Pharmacy, Bengaluru, 3 September 2016. 49 members participated (c) Al-Ameen College of Engineering, Bengaluru, 30 March 2016. 31 members participated (d) M.S. Ramaiah College of Nursing, Bengaluru, 24 September 2016. 33 members participated (e) BMS College of Engineering, Bengaluru, 29 September 2016. 31 members participated (ii) Engage to Change, Krupanidhi College of Pharmacy, Bengaluru, 17 September 2016. 100 members participated.

Dr. Paulomi M Sudhir, Professor, Dr. Poornima Bhola, Additional Professor, (i) Workshop on Behavioral Wellness for Employees of GE, Bengaluru, 9 November 2016. 20 members participated (ii) Workshop on Behavioural Wellness, GE Bengaluru, 22 November 2016. 20 members participated.

Dr. Keshav Kumar, Professor, Prof. Ravishankar, Head of Universal Design, National Institute of Design, Bengaluru, Workshop on Cognitive Aspects of the Elderly/Aging for 2nd Semester, Universal Design students, Bengaluru, 3 August 2016. 15 members participated.

Dr. Keshav Kumar, Professor, Prof. Shakti Banerjee, Head of Gaming Section, National Institute of Design, Bengaluru, Workshop on Relevance of Human Behavior in Gaming for 2nd Semester Diploma In Game Design Development Bengaluru, 21 March 2017. 15 members participated.

Clinical Psychology

Dr. Mahendra P Sharma, Professor and Head, (i) National Workshop on Mindfulness Integrated Cognitive Therapy in Adolescents with Obsessive Compulsive Disorder, Geetanjali Medical College & Hospital, Udaipur, 22-23 October 2016. 45 members participated (ii) National Workshop on Mindfulness–Based Cognitive Behavioural Interventions: Applications in Clinical and Nonclinical Settings, AIIMS, New Delhi, 5 March 2017. 17 members participated.
Dr. M Manjula, Additional Professor, Ms. Sharon Ruth, Clinical Psychologist, National Workshop on CBT Skills and Techniques in Clinical Practice, IPS South zone CME 2016, Bangalore Medical College and Research Institute, Bengaluru, 16 July 2016. 200 members participated.

Dr. M Manjula, Additional Professor, (i) Workshop on Understanding Depression and Suicidality and Developing a Comfortable Relationship with students, Vani Vilas Pre-University College, Bengaluru, 18 August 2016. 15 members participated (ii) Workshop on Managing Academic Stress and Exam Anxiety, Malleswaram Ladies Association College, Bengaluru, 10 March 2017. 45 members participated.

Dr. M Manjula, Additional Professor, Mr. Gurucharan, Research Associate, Workshop on Identifying Depression and Suicidality and Facilitating Help Seeking in College Students: Workshop for teachers, Government First Grade College, Vijayanagar, Bengaluru, 14 March 2017. 40 members participated.

Dr. Poornima Bhola, Additional Professor, Workshop on Self-injurious Behaviours, Samhita Academy, Bengaluru, 20 March 2017. 25 members participated.

Dr. Manoj Kumar Sharma, Additional Professor, Dr. Gitanjali Narayanan, Assistant Professor, Dr. Nitin Anand, Assistant Professor, Symposium on Technology Addictions: Risks and Emerging Factors, 43rd NACIACP, Coimbatore, India, 29 February 2017. 50 members participated.

Dr. Girish, Professor, Dr. Uma, Professor of Clinical Psychology, Dr. Senthil Amudhan, Associate Professor, Special Outreach Programme for Disabled, Anantharange Vidhya Samsthe, Kolar, 12 August 2016. 70 disabled children and their caregivers, 15 village rehabilitation workers participated.

Dr. BS Pradeep, Additional Professor, Dr. Arvind BA, Assistant Professor, Sensitisation Programme on Mental Health Promotion for ASHA Workers of Kolar District, 14-17 and 19-21 December 2017. 400 members participated.

Dr. Pradeep BS, Additional Professor, Dr. Gururaj, Sr. Professor and Head, State Sensitisation Programmes for Youth in Different Districts of Karnataka – Project Yuva Spandana – in association with the Department of Youth Empowerment and Sports, Govt. of Karnataka, 1 April 2016-25 March 2017. 2281 programmes, about 4,50,000 youth from various districts of Karnataka participated.

Dr. Madhusudan Reddy KR, Professor, Dr. Sonia Bansal, Assistant Professor, Dr. Ankur Luthra, Assistant Professor, PGIMER, Chandigarh, National Neuromonitoring Workshop, ISNACC 2017, PGIMER, Chandigarh, 24 February 2017. 30 members participated.

Dr. Gopalakrishna KN, Associate Professor, Dr. Dhiritman Chakrabarti, Assistant Professor, Dr. Joseph Monteiro, Anaesthesia Consultant, Dr. Shwetal Goraksha, Anaesthesia Consultant, PD Hinduja Hospital, Mumbai, National CME Programme on Neuroanaesthesiology, Kolhapur, 13 November 2016. 75 members participated.

Dr. Anupam Gupta, Professor and Head, National Workshop on Botox in Post-Stroke Spasticity management, 5th IFNRCON, Mumbai, 31 March 2016. 20 members participated.

Dr. Suvarna Alladi, Professor, (i) National Weekend Course in Cognitive Neurology, 29 April- 1 May 2016. 190 neurologists, psychiatrists and psychologists participated (ii) National Symposium on Cognitive Disorders in the 21st Century, Annual Conference of Indian Academy of Neurology, Kolkata, 9-12 November 2016. 100 Neurologists and Psychologists participated.

Dr. Gayathri, Professor, National Workshop on Enzyme Histochemistry, Slide Seminar, KLE Centenary Celebrations and 34th Annual National CME in Pathology, JNMC Belagavi, Karnataka 1-4 June 2016. 50 members participated.

Dr. SK Shankar, Emeritus Professor, Dr. Jharna Ray, Scientist, Executive Director, SN Pradhan Center of Neuroscience, Kolkata, National Neuroanatomy and Basic Neurophysiology Training for the 9th Indian Brain Bee Championship, Kolkata, 16-17 April 2016. 50 members participated.

Dr. SK Shankar, Emeritus Professor, Fr. Jobi Xavier, Head, Department of Life Science, Christ University, Bengaluru, Jeevotsav- An Intercollegiate Fest for Life Science Students, 22-23 August 2016. 400 college students and 120 school students participated.
Dr. SK Shankar, Emeritus Professor, Mrs. Saroja Sridharan, Principal, Chinmaya Vidyalaya, Stimulus-2016-A Biennial Art and Science Exhibition, Chinmaya Vidyalaya, Bengaluru, 23-24 November 2016. 2000 members participated.

Neurophysiology

Dr. Bindu M Kutty, Professor and Head, Mr. Dheeraj Subramniam, President of Pedalit Cycling Enthusiasts Group, Workshop on Living Different: The Art and Science of Flourishing, as a Public Awareness Programme on Healthy Living, Defence Colony Co-Operative Housing Society Ltd., Bengaluru, 8 May 2016. 25 members participated.

Dr. TN Sathyaprabha, Professor, Dr. Kunal MD, Associate Professor of Physiology, Sikkim Manipal Institute of Medical Sciences, Sikkim, Workshop on Evaluation of Autonomic Functions & Sleep Patterns in Health and Disease, Gangtok, Sikkim, 9-10 May 2016. 250 members participated.


Neurosurgery

Dr. Malla Bhaskara Rao, Professor and Head, Scientific Programme, 65th Annual National Conference of Neurological Society of India, Chennai, 15-18 December 2016. 1000 members participated.

Neurovirology

Dr. Ravi Vasanthapuram, Professor, Dr. Reeta Mani, Associate Professor, (i) National Workshop and Hands-On Training in Good Laboratory Practices, Reporting and Quality Assurance in JE Testing-AMCH, Dibrugarh, Assam, 6-8 June 2016, 33 members participated (ii) National Workshop and Hands-On Training in Good Laboratory Practices, Reporting and Quality Assurance in JE Testing- KGMU, Lucknow, Uttar Pradesh, 21-23 July 2016. 43 members participated.

College of Nursing

Dr. BV Kathyayani, Professor and Principal, coordinator (i) National Research Society India Conference, Haldwani, Uttarkhand, 21-23 October 2016. 300 members participated (ii) World Alzheimer’s Day in collaboration with ARDSI, Cubbon Park, 25 September 2016. 250 members participated.

Dr. BV Kathyayani, Professor and Principal, Dr. Priya Baby, Lecturer, Mrs. Annie John P, Clinical Instructor, Dr. Mythili D, Clinical Instructor, Mrs. N Sathyavathy, Clinical Instructor, Mrs. Kesiya CY, Clinical Instructor, World TB Day- Puppet Show & Health Education, Victoria Hospital, Bengaluru, 4 April 2016. 200 members participated.

Mr. B Jayakumar, Lecturer, Mrs. Kanitha D, Lecturer, Dr. C Rajeswari, Lecturer, Ms. Jeeva S, Clinical Instructor, Mrs. S Vijayalakshmi, Clinical Instructor, World Breast Feeding Week Celebration, Primary Health Centre, Bengaluru, 7 August 2016. 60 members participated.

Dr. BV Kathyayani, Professor and Principal, Dr. Priya Baby, Lecturer, Mrs. Kanitha D, Lecturer, Dr. C Rajeswari, Lecturer, Ms. Jeeva S, Clinical Instructor, Mrs. S Vijayalakshmi, Clinical Instructor, World Breast Feeding Week Celebration, Primary Health Centre, Bengaluru, 7 August 2016. 60 members participated.

Dr. Prabha S Chandra, Professor & Head, Dr. Geetha Desai, Additional Professor, BCHADS workshop, University of Liverpool, 27-30 June 2016. 17 members participated.

Dr. SK Chaturvedi, Professor, Workshop on Communication Skills during the Indian Association of Palliative Care Certificate Course, AIIMS, New Delhi, (a) 11-12 June 2016 (b) 5-6 November 2016.

Dr. Pratima Murthy, Professor, Dr. Sanjeev Jain, Professor, Seminar on Mental Health and the Institution: Histories and Futures, Ambedkar University, Bengaluru, 21 May 2016. 20 members participated.

Dr. Pratima Murthy, Professor, (i) National Consultation Workshop on Non-communicable Diseases (NCDs) in India, New Delhi, 21 June 2016 (ii) Workshop on Second Technical Resource Group meeting of the Adolescent Health Division Training meeting, Ministry of Health, Govt. of India, 26 July 2016.
Dr. Suresh Bada Math, Professor, Dr. Navneet Kumar C, Additional Professor, Workshop on Rights of Mentally Ill, KMC, Manipal, 12 November 2016.

Dr. Jagadisha T, Professor, Workshop on Essential Skills for Postgraduate Students in Psychiatry, Basavarajendra Auditorium, Bengaluru, 17 July 2016.

Dr. Navneet Kumar C, Additional Professor, Workshop on Legal Services to Mentally Ill and Mentally Disabled Persons Scheme – 2015, Central Jail, Bengaluru, 19 July 2016.


Dr. PT Sivakumar, Associate Professor of Psychiatric Rehabilitation, Dr. Suresh BM, Professor, Dr. C Navneet Kumar, Additional Professor, Dr. Arun K, Associate Professor, Symposium, Annual National Conference on Ethical and Legal Aspects of Mental Health in Special Populations, Indian Psychiatric Society, Raipur, 6 January 2017. 20 members participated.

Dr. Arun Kandasamy, Assistant Professor, Workshop on De-addiction, Bengaluru, 31 March 2017.

**Psychiatric Rehabilitation**

Dr. Krishna Prasad M, Associate Professor, Dr. Aarti Jagannathan, Assistant Professor of Psychiatric Social Work, Dr. Senthil V Reddi, Additional Professor, Dr. Suresh BM, Professor, Dr. C Navneet Kumar, Additional Professor, State Workshop on Suicide Prevention Program for Police Personnel in Prisons, Central Prison, Bengaluru, 24 October 2016. 50 members participated.

Dr. A Hareesh, Assistant Professor, Dr. Krishna Prasad M, Associate Professor, Dr. Deepak Jayarajan, Assistant Professor, Dr. Suresh BM, Professor, Dr. C Navneet Kumar, Additional Professor, National Symposium on Challenges in the Current Format of Assessment of Disability, Job Matching and Reservations in Government Jobs for Persons with Mental Illnesses in India, 69th National Conference of Indian Psychiatric Society, Raipur, 7 January 2017. 15 members participated.

**Psychiatric Social Work**

Dr. Sekar, Professor, Dr. Jaykumar, Assistant Professor. Work Place Stress Management Training on Mental Health for DMHP Functionaries of Chhattisgarh, Raipur, 28-29 March 2017. 45 members participated.

Mr. K Sekar, Professor, Dr. Jaykumar C, Assistant Professor, Mr. Sudeep Jacob, Research Scholar, Workshop on Suicide Prevention for DMHP functionaries of Chhattisgarh, Raipur, 30-31 March 2017. 22 members participated.


Dr. N Janardhana, Additional Professor, (i) Workshop on Counseling for the ICPS functionaries, Tirupati, Andhra Pradesh.

Ms. Padmavathy D, Staff Nurse, Gatekeeper Training in Suicide Prevention for Mentors, Azim Premji University, 1 February 2017. 30 members participated.

Dr. Seema Mehrotra, Professor of Clinical Psychology and Team, Workshop on Engage to Change, Kreupani College of Pharmacy, Bengaluru, 17 September 2016. 100 members participated.

Dr. Manoj Kumar Sharma, Additional Professor of Clinical Psychology, Workshop on (i) Technology Addiction, Stress and Anger Among Adolescents-Parent Role in Management, Mary Immaculate School, Bengaluru, 7 July 2016. 250 members participated (ii) Hi Tech Revolution and Cognitive, Social and Emotional Impact, RJS Pre-University College, Bengaluru, 10 August 2016. 125 members participated.

Smt. Padmavathy D, Staff Nurse, Ms. Tarunum Taj, Assistant Coordinator, Health Talk on Post Natal Psychosis, PHC, Tavarekere, Bengaluru, 14 January 2016. 52 members participated.

Dr. Prabha S Chandra, Professor and Head of Psychiatry, Dr. Poornima Bhola, Additional Professor of Clinical Psychology, NCWB


Dr. Dhanashekara Pandian, Additional Professor, (i) Clinical Social Workers Network Meeting, St. Johns Medical College and Hospital, Bengaluru, 7 December 2016. 49 members participated (ii) Clinical Social Workers Network Meeting, Kempegowda Institute of Medical Sciences (KIMS), Bengaluru, 1 September 2016. 40 members participated.

Dr. MN Vranda, Associate Professor, Dr. N Janardhana, Additional Professor, Workshop on Domestic Violence and Child Sexual Abuse, Bharosa, 9-10 March 2017. 20 members participated.

Dr. E Aravind Raj, Associate Professor, (i) Workshop on Psychosocial care in Disaster Management, ATI, Mysore, (a) 21-23 June 2016. 16 members participated (b) 16-20 August 2016. 16 members participated (ii) Workshop on Life Skills Education, FXB India Suraksha, Pondicherry, 12 September 2016. 37 members participated (iii) Workshop on Life Skills Education, Trivandrum, 26-29 September 2016. 37 members participated (iv) Workshop on Psychosocial Care for Survivors of Sumangali Program, Coimbatore, 22-24 November 2016. 28 members participated.

Dr. Sinu, Assistant Professor, Workshop on Alcohol and Substance Abuse among Students, Bengaluru, 11 January 2017

Dr. Bino Thomas, Assistant Professor, Training Programme on Teachers as Parents, Pathanamthitta, Kerala, 14 February 2017. 75 members participated.

Dr. Jaykumar, Assistant Professor, Workshop on Psychosocial Care in Disaster Management, National Civil Defense College, Nagpur, 16-20 January 2017. 41 members participated.

Dr. Kavita Jangam, Assistant Professor, Dr. D Muralidhar, Professor and Head, Workshop on School Mental Health Programme, Ashley International School, Bangarpet, 21 January 2017. 40 members participated.

Dr. Kavita Jangam, Assistant Professor, Workshop on School Mental Health Programme, Sharada Memorial School, Wilson garden, Bengaluru, February 2017. 40 members participated.

Dr. Kavita Jangam, Assistant Professor, Dr. Sekar K, Professor, Kavitha P, Project Coordinator, Training Workshop on Administration of Instruments for Children in Conflict with Law, SJD, Kerala, 12 May 2016. 20 members participated.

Dr. Chittaranjan Andrade, Professor and Head, Workshop on (i) Aripiprazole in Psychiatry: Recent Advances, Mangalore Psychiatric Society, Mangaluru, 15 April 2016. 50 members participated (ii) Bipolar Depression: Treatment Challenges, Behavior and Neuroscience Academy of India, Bombay, 16 April 2016. 50 members participated (iii) Will Lurasidone Change our Prescribing Practices? Workshop on The Changing Landscape,
FEATURED EVENTS


Speech Pathology & Audiology

Dr. Aravind R, Speech Therapist, Dr. Pradeep Y, Speech Therapist, Dr. Meera SS, Speech Therapist, Dr. N Shivashankar, Professor organized, ISHA-BC National Seminar on Movement Disorders – Medical & Speech Pathology Perspectives, 24-25 September 2016. 200 members participated.

Transfusion Medicine & Haematology

Dr. Sundar Periyavan, Professor and Head, (i) Inter Collegiate National Level Seminar on Blood and Organ Donation: Scientific and Motivation Aspects, Cochin, 5 October 2016. 60 members participated (ii) Workshop on Modern Blood Banking: A to Z of Plasmapheresis, 57th National Conference on Haematoccon, Jaipur, 9 November 2016. 20 members participated.

SPECIFIC TRAINING UNDERWENT BY FACULTY/STAFF

Biostatistics

Dr. P Marimuthu, Additional Professor, (i) One-Day Training in Recent Advances in Pattern Recognition Techniques, Indian Statistical Institute, Kolkata, 30 November 2016 (ii) One-Day Training, UGC Meet on New Portal for students DBT scheme, UGC, Delhi, 10 January 2017 (iii) Three-Day Training, Workshop on Exploring Gene Expression Data Using Transcriptome and Microarrays (as delegate), Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram, Kerala, 23-25 January 2017 (iv) One-Day Training, All India Survey on Higher Education (AISHE), RGUHS, Bengaluru, 28 February 2017 (v) Two-Day Training, PFMS - Central Sector Schemes, Canara Bank Staff Training College, Bengaluru, 6-7 March 2017.

Child & Adolescent Psychiatry

Dr. B Binukumar, Assistant Professor, One-Day Training, Workshop on Systematic Reviews and Meta-analysis, PHESA, Manipal University, Manipal, 5 January 2017.

Clinical Neurosciences

Dr. John Vijay Sagar, Additional Professor, (i) Three-Day Training, Workshop on Qualitative Research Methods and Analysis, SCARF, Chennai, 11-13 May 2016 (ii) Three-Day Training, National Workshop on Certification of Autism, MSJE, National Trust, Govt. of India, New Delhi, 31 August 2016-2 September 2016.

Dr. Preeti Jacob, Assistant Professor, Two-Day Training, Workshop on Forensic & Therapeutic Interviewing in CSA, Chennai, 20-21 June 2016.

Dr. Sowmyashree Mayur Kaku, Sr. Resident, Four-Day Training in Poster Presentation, International Meeting for Autism Research (IMFAR), Baltimore, USA, 11-14 May 2016.


Dr. Salah Basheer, Sr. Resident, (i) One-Day Training in Experimental Designing, Data Analysis and Presentation, JNCSR, Bengaluru, 14 July 2016 (ii) Two-Day Training in Wellcome Trust/DBT India Alliance Science Communication Workshop (SciComm), Hyderabad, 26-27 September 2016 (iii) One-Day Training, 22nd World Congress of International Association of Child and Adolescent Psychiatry and Allied Professions, Calgary, Canada, 19 September 2016.


Dr. Preethish Kumar V, Sr. Resident, Nine-Day Training, Summer School of Myology, Institute de Myologie, Paris, 23 June-1 July 2016.


Dr. Kiran Polavarapu, Jr. Resident, Five-Day Training in EMBO Practical Course: Targeted NGS in patients with Cancer, Mendelian or Complex Diseases, Jagiellonian University Medical College Center for Medical Genomics - OMICRON, Krakow, Poland, 19-23 September 2016.


Dr. Uma H, Professor, Dr. M Nithya Poornima, Assistant Professor, Two-Day Training, Workshop on Working with Learning Difficulties: Training in PREP and COGENT Programmes, Little BlueJays Care Private Limited and Dyslexia Association of Telangana, Bengaluru, 20-21 January 2017.

Dr. Devvarta Kumar, Additional Professor, Three-Day Training, 23rd EEG Lab Workshop, All India Institute of Speech and Hearing, Mysuru, 16-18 January 2017.

Dr. M Thomas Kishore, Associate Professor, (i) One-Day Certification Training, Using Bayley Infant Developmental Scales (funded by ICMR), NIMHANS, Bengaluru, 2 April 2016 (ii) One-Day Training, Master Trainers Workshop on Autism Tools- INCLEN and ISAA (funded by Department of Women and Child Welfare, Govt. of Karnataka), Vigyan Bhavan, New Delhi, 31 August 2016.

Dr. Aruna Rose Mary Kapanee, Assistant Professor, 12-Day Training on Leadership in Mental Health Sangath, in collaboration with the London School of Hygiene and Tropical Medicine, Goa, 28 November-9 December 2016.

Dr. Shantala Hegde, Assistant Professor, (i) Five-Day Training, Science Fellow - Exploring Mind Through Music 2016 (Course on Cross-Disciplinary Seminars: Music Theory and History Brain Morphology, Music Perception, Cognition and Experimental
Design), Shepherd School of Music, Rice University, Houston, Texas, USA, 6-10 June 2016 (ii) Seven-Day Training (Course on: Electroencephalography, Magnetic Encephalography and Functional Magnetic Neuroimaging), Helsinki Summer School in Cognitive Neuroscience 2016 (HSSCN 2016), Cognitive Brain Research Institute of Behavioural Sciences & Cicero Learning, University of Helsinki, Finland, 11-17 July 2016.


Dr. Gitanjali Narayanan, Assistant Professor, One-Day Training (Online), Interpersonal and Social Rhythm Therapy (IPSRT), APA Certified 3C Institute, 8 May 2016.

Neurochemistry

Dr. Ravish H, Assistant Professor, Four-Day Training, NABL Workshop on Quality Management Systems and Internal Audit in Medical Laboratories, Rajarajeshwari Medical College and Hospital, Bengaluru, 7-10 February 2017.

Neuromicrobiology

Dr. R Ravikumar, Professor, (i) Two-Day Training, 5th National Conference for Laboratory, NABL, Indian Habitat Center, New Delhi, 27-28 October 2016 (ii) One Month Training, 30th Programme on Care, Breeding and Management of Laboratory Animal, Central Animal Research facility, NIMHANS, Bengaluru, 3 August- 4 September 2016.

Dr. Nagarathna S, Professor, Three-Day Training, Brucellosis 2016, National Agriculture Science Centre, New Delhi, 17-19 November 2016.

Psychiatric Social Work

Dr. Kavita Jangam, Assistant Professor, Two-Day Training in Forensic Assessment of Children Victims of Sexual Abuse, Tulir-Centre for the Prevention and Healing Child Sexual Abuse, Chennai, 20-21 June 2016.

Neurosurgery

Dr. Dwarakanath, Visiting Fellow in Cerebrovascular and Skull Base Neurosurgery, University of Washington, Seattle, WFNS-NIMHANS, 14 March 2017-16 April 2017.

Dr. KVL Narasinga Rao, three-month training in Osaka State University, Osaka, 8 February 2017 – 5 May 2017.

Dr. Nupur Pruthi, Training Research Fellowship in Neuroanatomy, Department of Neurosurgery, Yeditepe University, Istanbul, Turkey, 7 March 2016- 20 May 2016.


Dr. Praburaj AR (i) three-day training in 1st Indian Course of Intra Operative Neuro Monitoring in Neurosurgery, Kolkata, 3-5 February 2017 (ii) three-day training in Indo-Japan Advanced Skull Base and Neuro-vascular Surgery Workshop, AIIMS & WFNS(I), AIIMS, New Delhi, 13-15 February 2017.
Dr. Ramachandra N Moorthy Foundation for Mental Health and Neurological Sciences, established to promote training and academic activities in the field of mental health in India, funded 25 training, capacity building and other vital educational activities/programme, during the year 2016-2017. Several educational materials and manuals were printed from these funds. The Fifth Leadership and Professional Skills Course for Early Career Psychiatrists, was held from 2-4 February 2017, which had invited participants from the SAARC countries. There were seven international participants from Sri Lanka, Nepal and Bangladesh, and eight from India.

Dr. Ramachandra N Moorthy Foundation for Mental Health and Neurological Sciences at NIMHANS was created through a generous donation by Dr. Ramachandra N Moorthy, an Indian-born Psychiatrist in Vancouver, Canada. The total donation was about Rs. 3.35 crore, and it has been decided to use the annual interests generated (of about Rs. 30 lakh) for various academic activities. A committee has been formed under the chairmanship of the Director of NIMHANS and includes the Registrar, Deputy Finance Officer, Visiting Professor Dr. Mohan K Isaac, Dr. Ramachandra N Moorthy, and faculty members from the departments of Clinical Psychology, Psychiatric Social Work, and Nursing. The Member Secretary coordinates the activities funded by the foundation.

**World Stroke Day 2016**

World Stroke Day was celebrated on 26 October 2016 under the theme “Face the Facts: Stroke is Treatable”.

The event was organised by the Physiotherapy Centre to raise awareness on the profound impact of stroke on individuals and families with particular emphasis on the appropriate quality long-term care and support for stroke survivors, including their care providers.
Neurobiology Research Centre

Neurobiology Research Center (NRC), a sophisticated common research facility, continues to provide a platform to promote interdisciplinary and inter-institutional collaborative research at NIMHANS. The centre provides infrastructure to support translational research and development of cutting-edge technology in frontier areas of neuroscience. It houses 15 research laboratories and two central facilities. Most of the laboratories continue to receive extramural grants for their research works from DBT, DST, ICMR, CSIR among others. The mandate of the NRC is that all the central facilities and research laboratories are common facilities, to be shared and used by scientists, research scholars and students at NIMHANS.

A. Common Facilities

Human Brain Tissue Repository (Human Brain Bank; Faculty In-charge: Dr. Anita Mahadevan)

The Brain Bank has continued to actively pursue its mandate with respect to (a) collection of donated brains from cases of neurodegenerative and infective conditions (b) collection of brains from victims of road traffic accidents (RTA) as relatively normal controls (c) distribution of the brain tissue, CSF and serum to research to scientists from all over the country. The brain specimens and CSF/serum have been collected following written informed consent from close relatives. Human Brain Bank is actively involved in the promotion of neuroscience and public awareness programmes about cadaver organ donation and brain donation. This has led to an increase in the number of donors who have pledged their brain for research after death. Brains of eight deceased patients/donors were acquired with the permission of their families for research purpose during the year. To promote public awareness and education amongst school children, several outreach programs were conducted in various schools and colleges.

Neuropathology Brain Museum (Faculty In-charge: Dr. Vani Santosh)

The Neuropathology Brain Museum (Human Brain Museum), the only one of its kind in the country, has become a centre of attraction for the students of various colleges and schools and the tourists alike to have a look at the diverse collection of specimens/samples of human brains and other vital organs. During 2016-2017, a total of 1913 students from various schools and colleges visited the Brain Museum. In addition, many foreign scientists and dignitaries, who came to NIMHANS for scientific collaboration, visited the Brain Museum and greatly appreciated the unique collection and the means of display. The Brain Museum was also widely reported in print and electronic media. The total number of visitors to the Neuropathology Brain Museum during 2016-2017 stood at 4327. The Brain Museum was also widely reported in print and electronic media. The visitor footfall has been increasing every year owing to the wide dissemination of information about the facility in the print, electronic and social media. The staff of Human Brain Bank regularly conducts guided tour for the visitors explaining the nature and importance of the exhibited specimens including the human brain, spinal cord and other organs. The museum has prepared/distributed/donated several posters as a public awareness initiative and these are being used regularly in the local exhibitions organized by schools/colleges and Indian Epilepsy Association.

B. Research Laboratories

Translational Psychiatry Laboratory (Faculty In-charge: Prof. G. Venkatasubramanian)

The Translational Psychiatry Laboratory (TransPsych Lab) facilities have been created towards initiation of an integrated clinical research facility with focus on translational applications in psychiatry. This research facility is supported by research grants from Welcome Trust / DBT India Alliance Senior Fellowship Award as well as from the Department of Biotechnology. The goal of the TransPsych Lab is to evaluate and establish composite biomarkers involving neuroimmunobiological abnormalities in Schizophrenia and other disorders like Obsessive Compulsive Disorder, Bipolar Affective Disorder and Alzheimer’s disease. The vision of this centre is to create an international calibre translational research facility integrating clinical, neuroimmunological, neuropathological, neuroimaging & advanced computational research techniques to examine the Neuroimmunopathogenetic Model for Schizophrenia. Ongoing research activities focus on examining the neuroimmunogenetic and neuroplastic correlates of brain abnormalities in schizophrenia, neuromodulatory effects of tDCS in schizophrenia, eye movement abnormalities in schizophrenia and OCD, EEG/ERP abnormalities in schizophrenia and OCD, neurohemodynamic abnormalities in schizophrenia using functional Near Infrared Spectroscopy and imaging-genetics studies in OCD.
TransPsych Lab facilitates provision of transcranial direct current stimulation for schizophrenia patients, OCD and several other psychiatric disorders. Research staff in the lab contributes to the clinical services of the schizophrenia clinic as well as the metabolic clinic.

**Multi-modal Brain Image Analysis Laboratory (Faculty In-charge: Prof. John P. John)**

The laboratory aims at integrating the acquisition and analysis of multiple modalities of brain imaging for a more comprehensive understanding of brain structure, function and signalling in various neuropsychiatric disorders. This facility also aims at employing an integrated multi-disciplinary approach to examine brain structure and function in health and disease through active collaborations between various departments both within and outside the institute. Research projects being undertaken at MBIAL include multi-modal imaging-genomics studies in schizophrenia and dementia, as well as of certain cognitive processes; these projects are funded by the Department of Science and Technology (DST) and Department of Biotechnology (DBT). Many PhD scholars, MD (Psychiatry) post-graduates as well as trainees from other departments of NIMHANS as well as external trainees have also utilized the facility for obtaining training in various aspects of multi-modal image acquisition and analysis.

The lab is involved in the neuroimaging/electrophysiology core of the multi-institutional DBT-funded project titled “Accelerator program for Discovery in Brain disorders using Stem cells (ADBS).” Some of the other major thrust areas of research at MBIAL include: (i) Utilizing multi-modal imaging methods in conjunction with molecular genetics, neurochemical and neuropsychological approaches to investigate the neurobiology of schizophrenia, dementia as well as consciousness, (ii) Resting and task-based functional connectivity analyses in mild cognitive impairment and dementia, (iii) Mathematical modelling of gene-gene and protein-protein interactions affecting brain morphometry in schizophrenia, (iv) Brain functional connectivity underlying conscious awareness and its aberrations in schizophrenia, (v) Machine learning approaches using multimodal neuroimaging metrics in schizophrenia, (vi) Study of the neural correlates of prospective memory, an important brain function mediated by the rostral prefrontal cortex, and (vii) Development of computerized cognitive intervention programs.

**Advanced Flow Cytometry Laboratory (Officer In-charge: Prof. V. Ravi)**

The flow cytometry lab is equipped with an advanced four-laser BD FACS Aria III cell sorter and a three-laser FACS Verse analyzer, which enable sorting and analysis of single cells based on multiple parameters respectively. Students/researchers from various other departments of the Institute use this facility for their research works. The ongoing research activities are: (i) Immune Signatures of Responses to Dengue Virus Infection, (ii) Role of immune dysregulation in post-partum psychosis, (iii) T-cell responses in Japanese encephalitis and original antigenic sin, (iv) Study on Vitamin D and its association with immune function in Autism Spectrum Disorder, (v) Immunobiology of Neuromyelitis Optica, (vi) RNA interference mediated downregulation of human telomerase reverse transcriptase (hTERT) in LN18 cells, and (vii) Immune abnormalities in Schizophrenia.

**Metabolic laboratory (Faculty In-charge: Prof. Rita Christopher)**

The focus of the Metabolic Laboratory is to provide diagnostic services for the identification of neurometabolic disorders and to carry out translational research in neurometabolic and cerebrovascular disorders. Since 2007, this laboratory has been conducting tandem mass spectrometry-based screening for inborn errors of metabolism. In a 3-mm dried blood spot collected on filter paper, 10 amino acids, free carnitine and 30 acylcarnitines are measured using a triple quadrupole liquid chromatography-mass spectrometer, and based on the characteristic profiles, inborn errors of amino acid metabolism, fatty acid oxidation defects and organic acidemias are identified. This facility, which is the first of its kind in a government set-up in the country, attracts samples from all over India as well as from other neighbouring countries. Since 2008, the lab has been participating and obtaining 100% satisfactory results for amino acid and acylcarnitine testing in the Newborn Screening Quality Assurance Program, conducted by the Center for Disease Control and Prevention (CDC), Atlanta, USA.

During the year under review, a low-cost, robust and sensitive mass spectrometry-based method was established for measuring a panel of very long-chain lysosphosphatidylcholines (C20:0, C22:0, C24:0 and C26:0 LPCs) in dried blood spots to screen for X-linked adrenoleukodystrophy and other peroxisomal disorders. Using this method, 1529 patients were tested and cases of X-linked adrenoleukodystrophy identified. This research is funded by grants from DBT. Investigators have also standardised mass spectrometry-based methods for measuring vitamin D and a panel of steroids in the blood. Using our in-house methods they have measured vitamin D and steroids in the serum of patients. Studies are also being conducted to identify differentially expressed microRNAs in the plasma and ruptured aneurysm tissue of patients with aneurysmal subarachnoid haemorrhage to determine their utility as diagnostic biomarkers and to elucidate their possible role in the formation and rupture of intracranial aneurysms. The role of estradiol and estrogen receptors in the patho-mechanism of cerebral aneurysm rupture is also being explored. Several collaborative projects with the faculty of the Institute and of Jayadeva Institute of Cardiovascular Sciences and Research, are also being conducted.

**Neuro-Oncology Lab (Faculty In charge: Prof. Vani Santosh)**

The Neuro-Oncology Lab has been established with a prime objective of translational research in neuro-oncology. The lab focusses on tissue based...
research along with collaborations with core biological research institutes. This has paved way in understanding the pathogenesis of several adult and pediatric brain tumors with emphasis on gliomas, medulloblastomas and meningiomas. The following research programmes are in progress; (i) Histo-molecular characterization of Peritumoural Brain Zone in Glioblastoma; (ii) Mitochondrial DNA copy number variation in Glioblastoma and its effect on glioblastoma pathogenesis; (iii) Molecular profiling of Gliosarcoma; (iv) Prognostic relevance of clinically relevant genetic and epigenetic molecular biomarkers in glioblastoma; (v) Molecular alterations in paediatric glioblastoma.

Molecular Biology Laboratories: Communicable and Non-communicable (Faculty In-charge: Prof. V. Ravi)

The Molecular Biology Labs (Communicable and Non-Communicable Disease labs) are being used routinely by students from various departments at NIMHANS namely Human Genetics, Molecular Genetics, Biophysics, Bioinformatics, Neuropathology, Neurochemistry, Neurovirology, Neurophysiology, Neuromicrobiology either for performing Real Time PCR/ Conventional PCR assays or for analysis of gels / blots on the chemiluminescence enabled Gel Documentation system. Two rooms in this facility are being used for cell culture work by the Molecular Genetics Lab. Research work on immune responses in patients with mild, moderate and severe infection by influenza virus (H1N1) infection has been completed. Faculty and students in the two laboratories are carrying out a comparative study of innate and cell mediated immune responses in human immunodeficiency virus infected individuals with and without Neurotuberculosis. Molecular aspects of the pandemic Influenza A 2009 (H1N1) viruses are being studied with special reference to host immune factors, offering molecular diagnosis for dengue. Epidemiology of dengue virus and immune signatures during responses to dengue virus infection are also being explored.

Molecular Genetics Laboratory (Faculty In-charge: Prof. Sanjeev Jain)

Molecular Genetics Laboratory carries out research projects and diagnostic work in neuropsychiatric conditions like schizophrenia, bipolar affective disorder, obsessive compulsive disorder, dementia, Huntington’s disease, spino-cerebellar ataxia, Duchene’s/Beckers muscular dystrophy and spino-muscular atrophy. The protocols for leukocyte isolation from peripheral blood (PBMC), Epstein Barr virus supernatant generation and lymphoblastoid cell line establishment (LCLs) were established and samples processed appropriately. LCLs were established for samples with neuropsychiatric conditions till date (dementia, bipolar affective disorder, obsessive compulsive disorder, Huntington’s disease and spino-cerebellar ataxia). Using lymphoblastoid cell line as model system, research works are being carried out on Alzheimer’s disease, bipolar affective disorder and obsessive compulsive disorder samples.

Patient care services include genetic testing for DMD/BMD and SMA through MLPA and PCR-RFLP methods. The diagnostic work has been initiated as self-sustaining project for the last two years. The lab has several ongoing research projects including Accelerator program for discovery in brain disorders using stem cells (ADBS) and separate laboratory facility is being established.

Bioinformatics Laboratory (Faculty In-charge: Prof. V. Ravi)

The Bioinformatics and Proteomics Laboratory is actively involved in genomic, proteomic, phosphoproteomic and glycoproteomic analysis of various human tissues, body fluids and cell lines to understand the cellular biology. The major thrust areas of this laboratory encompass study of proteomic map of human brain; chronic meningitis including tuberculous meningitis, cryptococcal meningitis, and toxoplasma encephalitis; infections including rabies encephalitis, pathogenic fungi and cerebral malaria and neurological disorders such as stroke, ALS, schizophrenia, muscle dystrophy, traumatic brain injury, and X-linked intellectual disability. The centre is involved in the execution of several projects in collaboration with the scientists from various departments of the Institute.

Cell Culture and Stem Cell Biology (Faculty In-charge: Prof. TR Raju)

The prime objective of this laboratory is to investigate the pathomechanisms of neurodegenerative diseases such as ALS and PD using in-vitro model systems. The laboratory is well equipped with the best possible infrastructure for carrying out cutting-edge research. Currently, primary cultures of motor neurons, astrocytes, microglia, olfactory bulb, cell lines of motor neurons (NSC-34), dopaminergic neurons (N27), neuroblastoma (SHSY5Y) and glioblastoma (U251MG, U87MG) as well as the Human Embryonic Stem Cells (BJNhem20) are grown in this laboratory. Several funded projects are being executed in this laboratory. Research scholars (PhD and MPhil scholars as well as DM Neurology residents) from other departments of the institute and several external trainees are utilizing the available facilities. The current research projects include: (i) Directed differentiation of human embryonic stem cells into motor neurons, their characterization & use as a cellular model for sporadic amyotrophic lateral sclerosis; (ii) Functional impairment of motor neurons in a rat model of Sporadic Amyotrophic Lateral Sclerosis (iii) miRNA mediated regulation of Müller glial cells innate immunity under inflammation.

Electrophysiology Laboratory (Faculty In-charge: Prof. BS Shankaranarayana Rao)

The Electrophysiology Laboratory is engaged in evaluating the synaptic plasticity mechanisms in various animal models of neurological and psychiatric disorders. Activity-dependent synaptic modulation and information processing in live brain slices of the hippocampus and medial
prefrontal cortex are being studied. The researchers are also studying plasticity mechanisms in the hippocampus, cortex and amygdala in animal models of stress, anxiety, depression and epilepsy. Several strategies to restore cognitive deficits and abnormal synaptic plasticity in the above mentioned disease conditions by rewiring and remodelling of neural circuits including pharmacological and non-pharmacological approaches have been developed. In addition, the researchers have used microelectrode array technology for in vitro recording of electrophysiological activity of neurons. The patch-clamp facility is being established to study the channelopathies and channel kinetics in animal models of neuropsychiatric disorders including depression, aging and epilepsy.

The ongoing research activities include; (i) studying the cellular and molecular basis of endogenous depression induced abnormal synaptic plasticity in the hippocampus in terms of evaluating altered long-term potentiation (LTP) and long-term depression (LTD); (ii) evaluation of antiepileptic activity of both crude and active components of medicinal plants; (iii) the cellular and electrophysiological basis of restoration of stress-induced cognitive deficits and altered synaptic plasticity by chronic treatment with *Clestrus paniculatus*; (iv) the synergistic action of short-duration enriched environment with sub-effective doses of antidepressant treatment on depression induced cognitive deficits; (v) role of enriched environment and antidepressants on chronic stress-induced depression and cognitive deficits; (vi) modulation of amygdalar activity and its impact on stress-induced cortical plasticity; (vii) evaluating the role of enriched environment and antiepileptic drugs on epilepsy-induced abnormal electric activity on the hippocampus, cortex and amygdala; (viii) effect of modulation of glutamatergic transmission and brain stimulation rewarding experience on anxiety and depression; and (ix) Epilepsy-induced synaptic remodelling in the hippocampus.

**Optical Imaging Laboratory (Faculty In-charge: Prof. Preeti Joshi)**

This laboratory is an advanced facility for conducting real time recording of signalling events in cells and tissue. The laboratory is equipped with confocal microscope, epifluorescence systems for imaging and patch clamp setup for electrical recording from cells. These techniques are being used by the researchers to unravel the cellular and molecular basis of physiological and pathological signalling in the nervous system. The long term objective of the research is to identify the defective signalling modules and its origin at molecular level (ion channels/receptors etc.) in neuro-psychiatric disorders. This can be translated into targeted therapy by developing drugs against the identified molecular targets.

The researchers in the lab are currently focusing on (i) understanding the neuron–glia interaction in neurological disorders (ii) studying the glutamate handling capability of astrocytes in the dorsal and ventral horns of spinal cord (iii) analysing the role of cytosolic HDACs in the pre and post synaptic functions of excitatory hippocampal neurons.

**Neuromuscular laboratory (Faculty In-charge: Prof. AB Taly)**

The Neuromuscular Laboratory, in keeping with its mandate, continued to provide advanced diagnostics and promote research in neuromuscular disorders. The advanced diagnostic facility for immune mediated disorders and muscle disorders initiated on a self-sustaining mode with seed grant from NIMHANS, a couple of years ago, has been running successfully and new tests have been introduced expanding the scope of tests. Availability of these tests has greatly benefited patients and assisted in diagnosis, and timely institution of therapy.

Research activities in progress include: (i) analysis of respiratory chain complexes in muscle tissue of patients with clinical diagnosis of mitochondrial disorders and its correlation with the phenotype and genotype (ii) Determining the immunological mechanisms of GB Syndrome with specific reference to Th17-mediated immune response.

Two projects to study the presence and role of antibodies against novel ganglioside complexes are underway. Systematic analysis of antibody profile in patients with myasthenia gravis has been done and is nearing completion. Availability of testing facility for neuromyelitis optica and autoimmune encephalitis has helped diagnose several patients and provided an opportunity to learn about these emerging entities. The clinical, electroencephalographic findings and response to treatment in children diagnosed to have anti-NMDAR Encephalitis is being evaluated.

**Neurotoxicology Laboratory (Faculty In-charge: Dr. Srinivas Bharath)**

The Neurotoxicology Laboratory focuses on investigating the mechanistic and therapeutic aspects of neurotoxic models with implications for degenerative diseases. To understand the toxicological basis of disease, the laboratory employs biochemical, proteomic and epigenetic methods. The role of oxidative stress and mitochondrial damage in neurotoxicity is being studied. The ongoing research activities include: (i) Analysis of the epigenetic regulation of red/ox mechanisms in neurotoxic models of Parkinson's disease involving investigation of the role of chromatin modifications (ii) Neuroprotective effects of nano-assisted C60-pyrimidine derivatives in neurotoxic models of Parkinson's disease (iii) Analysis of natural products and their derivatives in experimental models of Parkinson's diseases (iv) Analysis of transcriptomic and epigenetic mechanisms associated with 3-nitropropionic acid neurotoxicity; (v) Comparison of manganese and MPTP toxicity: Implication for movement disorders.

**Music Cognition Laboratory (Faculty In-charge: Prof. Mahendra P Sharma and Dr. Shantal Hegde)**

The aim of this laboratory is to carry out research in the area of neuromusicalogy and music cognition. The objective is to examine the neural correlates and cognitive processes involved in music perception,
The Virtual Department of Clinical Neurosciences

The Virtual Department of Clinical Neurosciences has been created to foster research temperament amongst medical graduates with brilliant academic records. The long-term objective of creation of the discipline of Clinical neurosciences is to boost capacity at the national level in the emerging field of Translational Medicine, specifically as it applies to Neuroscience. The Institute envisages that the department would succeed in bringing out clinician-neuroscientists, who are equally adept in both clinical and research aspects, unlike the dichotomy that seems to exist at present. This enterprise, therefore expects to bridge the wide gap that exists between the “bench and the bed-side”, thereby leading to translational research that will have more direct clinical applications.

The Department has three adjunct faculty members: Dr. John P. John (HoD and Professor of Psychiatry), Dr. Srinivas Bharath (Additional Professor of Neurochemistry), and Dr. A. Arivazhagan (Additional Professor of Neurosurgery). Dr. Vani Santosh (Professor of Neuropathology) served as the Head of the Department for a period of three years (2013-2016). The department currently has 25 PhD scholars (5 candidates per year) who are selected and provided financial support under the Indian Council of Medical Research (ICMR) Talent Search Scheme (TSS). Five candidates who have completed MBBS with brilliant academic records are selected each year on the basis of a competitive national-level entrance examination and personal interview, conducted along with the annual entrance examinations for all courses at NIMHANS.

Centre for Public Health

The Department of Epidemiology and Centre for Public Health was entrusted with the responsibility of developing – implementing – and coordinating the first ever National Mental Health Survey in India by the Ministry of Health and Family Welfare (MoHFW), Government of India. The results and implications of the survey were reviewed by Shri. Anshu Prakash, Joint Secretary, MoHFW, Shri. Oma Nand, Director (H), MoHFW and Prof. BN Gangadhar, Director, NIMHANS in a joint meeting held on 1 June 2016 at NIMHANS. The Summary Report of NMHS was released at New Delhi by Smt.

The report titled “Prevalence, Pattern and Outcomes” containing detailed information on methods and results of survey and the second report titled “Mental Health Systems” which has the details on current status of mental health services and programmes across 12 states were also released at the Convocation of NIMHANS on 27 December 2016. The reports were disseminated across the state teams and to ministries that were involved in NMHS.

IEC Activities and Outreach Programmes

During 2016-17, an IEC leaflet on marital enrichment therapy was brought out and two issues of ‘The Loudspeaker – Amplifying the Voice of Mental Health’, a mental health magazine for general public were published with support from Dr. Ramachandra N Moorthy Foundation for Mental Health & Neurological Sciences.
NCWB has started public lectures series from July 2016 to promote mental health and increase awareness. Thought provoking talks by prominent mental health professionals from NIMHANS focus on de-mystifying mental health issues and creating a bridge between experts and the community. Six public lectures have been conducted till date as part of this new initiative. ‘Wellbeing Volunteers Programme’ has also been initiated this year 2016 for community volunteers to help them equip their skills in the process of identification of mental health problems in community and facilitation of home visit/telephone services, basic counselling, stress management, suicide prevention strategies and psychosocial competencies of children which cover the preventive, curative and promotion components of mental health issues.

As part of the outreach programmes, the Positive Psychology Team and SHUT services of the NCWB conducted workshops at various colleges in the city.

Central Animal Research Facility

The Central Animal Research Facility (CARF) was started in the year 1979 for pursuing and conducting research and training in neurobiological sciences. At CARF, adequate care is taken to follow rules and regulations, and humane care of laboratory animals, as proposed by the Ministry of Social Justice and Empowerment, Government of India, the Committee for the Purpose of Control and Supervision of Experiments on Animals and the Breeding of and Experiments on Animals (Control and Supervision) Rules 1998 and 2001.

CARF is one of the few lab animal facilities in the country for which CPCSEA has granted license to ‘Education, Breeding and Research’.

The facility has been upgraded with Intravital Fluorescent Microscope to make observations and acquire in-vivo measurements and assess biological relevance in an intact physiological environment in living animals. This technique allows investigation of vascular microcirculation of a number of tissues including tumors. Studies on physiology and pathophysiology in live animals, blood circulation into the brain, leukocyte-endothelial interactions, macrophage function, and lymphatic circulation studies are now being carried out.

The CARF maintains good standards in husbandry practices, uses laboratory animals for research responsibly and is deeply committed to the principle of 3 R’s: Reduction, Replacement and Refinement of use of animal for research.

During the year 2016-17, the CARF housed and maintained a total of 82,822 animals (mice: 30,137; rats: 52,295, guinea pigs: 240; rabbits: 150). CARF was also involved in manpower development activities including organizing IAEC meetings and conducting training programmes in handling laboratory animals and legislation on the use of animals for experiment and animal welfare. A total of 21 researchers from various departments of the Institute were trained in care, breeding and management of laboratory animals.

During the period under review, three meetings of the Institutional Animal Ethics Committee (IAEC) were convened and a total of 37 research projects were placed before the IAEC for consideration to conduct research-using animals. Out of the 37 projects (20 projects from Neurophysiology, 7 from Biophysics, four each from Neurochemistry and Neurosurgery and one each from Neuroanesthesia and Neurovirology), 18 were new, 15 submitted for renewal, and four for extension. Dr. BS Shankaranarayana Rao, Professor of Neurophysiology has been designated as Scientist/Officer-in-charge (from January 2017) to oversee the functioning of facility.

Physiotherapy Centre

Physiotherapy Centre offers an extensive range of services for both inpatients and outpatients, complemented by quality care based on established professional standards and available resources. A combination of education, manual therapy, physical intervention and electro-physical equipment is used for the treatment. Physiotherapists at the centre actively take part in various continuing education programmes and workshops to follow the advanced practices.

Physical therapy is concerned with identifying and maximizing quality of life and movement potential within the spheres of promotion, prevention, treatment/intervention rehabilitation and restoration of functionality. This encompasses physical, psychological, emotional, and social wellbeing. Physical therapy involves the interaction between the physical therapist, patients/clients, health professionals, families, caregivers and communities in a process where movement potential is assessed and goals are agreed upon, using knowledge and skills unique to physical therapists. a comprehensive team of experienced therapists who design rehabilitation programs to meet the specific needs of individual patients, provide quality care for complex conditions.

Biomedical Engineering

The Biomedical Engineering (BME) Section of NIMHANS provides technology management and supports equipment planning, acquisition and integration. It is also responsible for testing, repairing, and maintenance of medical (diagnostic and therapeutic) equipment in the Institute. The section’s efforts are directed towards biomedical and radiographic devices and systems used in a variety of patient care and care-support services. It focuses on improving patient care through...
maximizing operational availability of technology, minimizing risk to patients, visitors, and care providers.

Equipment maintenance

In addition to preventive maintenance, calibration and installation of multiple equipment(s), the section offers services for clinical equipment owned and used within the hospital, in compliance with regulatory agencies. Pre-purchase evaluations of new technology and equipment and assistance to clinical departments in service contract analysis, negotiations and management are also provided. Coordinating clinical equipment installations and conducting device incident investigations form the other services extended by the section.

Heavy duty steam sterilizers, ETO gas sterilizer, glove washing machines, air blowers & ultrasonic cleaning machines at the Central Sterile Supply Department (CSSD) are regularly maintained by the BME section to ensure smooth functioning.

A range of cooking equipments (in the Dietary Section) operated through both steam and electricity including bulk ovens, wet grinders, cooking gas line, food distribution trolleys, exhaust hood system, etc. are being maintained and preventive maintenance carried out regularly by the BME section.

The mechanised laundry section consists of heavy duty washing machines, hydro extractors, steam boilers and calendering, ironing, dry-cleaning machines. Approximately 1000 kg of wet linen is being washed every day by passing high pressure steam to kill bacteria. The up-keeping, repair and maintenance of the above equipment are being carried out by the BME section.

In order to cater for the requirements of medical gases to the patient care in the neuro and psychiatry wards, centralized medical gas system equipment have been installed at two different blocks. The system consists of heavy duty air compressors, vacuum pumps, liquid oxygen plant and nitrous oxide manifold. The plant is being operated round the clock and BME is responsible for the maintenance works. The pipeline is provided in all the wards up to the patient bed and continuous monitoring is carried out for leaks, ensuring smooth functioning of the system.

Central Telephone Exchange

NIMHANS Exchange is running on Ericsson Digital EPABX with 1000-line capacity. The entire Institute’s and resident quarters’ telephone distribution and maintenance are handled by the BME section. In addition to the telephone lines, the Closed User Group (CUG) mobile services provided through BSNL scheme has been integrated into the EPABX for mobile communication among custom users of the Institute.

Audio-Video Integration & Presentation Systems

NIMHANS is equipped with the latest audio and video integration systems with wireless presentation facility in major conference rooms and virtual classrooms. Hardware and associated software support for these facilities are provided by the BME section. Digital Signage System is made available in the OPD and Emergency Services units as a centralized content delivery system.

NIMHANS Data Centre

NIMHANS has setup a data centre to accommodate different facilities required to run various hospital applications smoothly. This data centre is equipped with more than 19 servers, storage infrastructure and high speed network connectivity. Now more than five applications, related to different areas like project, salary, etc. are running successfully from this data centre. New-generation-higher-end network devices like firewall, layer-3 switches are also included.

One new mini data centre using very advanced integrated infrastructure is almost ready. This will act as a near Disaster Recovery (DR) centre. Both these data centres are connected by 10gbs links incorporating high redundancy feature.

The power and cooling infrastructure has also been upgraded by installation of additional high capacity generators, precision AC units and UPS.

Disaster Recovery Centre has been set up to provide business continuity and protect the critical patient data in the event of a natural disaster or other emergency that causes downtime of the Data center. It is running on 10 Gbps bandwidth connectivity to critical departments like Emergency, OPD, Neuro Center and laboratories which are patient data intensive.

With storage-to-storage replication and virtualization technologies between sites, the DR is having very short recovery time by considering the Recovery Point Objective and Recovery Time Objective as 15 minutes to make high availability of data. The DR is setup with Modular Safe, a state-of-the-art technology with IP56 and F90 standard which ensure the fire, water and dust protection in a cost effective manner. Virtualization environment for hosting application with site recovery feature has been enabled.

NIMHANS Network

Initial phase of network implementation has facilitated connection to various departments of NIMHANS with 10G or 1G single mode fibre in redundant manner to boost the performance in accessing the entire applications across the campus.
A local ring connecting Institute’s existing Data Centre with different building has been established for redundancy purposes. Installation of another level of network link redundancy is in process to facilitate access to critical applications during the time of disaster through disaster recovery setup.

New generation L3 switches have been installed in each building along with 1gbps new access switches to enhance the performance. Wireless network has also been upgraded by installing new APs along with facilities for differentiating the guest and normal users’ traffic and giving individual password to users.

Wireless network has now been extended to the entire campus by installing new APs with building-wise VLANS for enhanced security along with facilities for differentiating the guest and normal users’ traffic by giving individual password to users binding their devices.

Cyber Security

NIMHANS has taken necessary security protection for network, servers, applications and client systems by using network firewalls, Intrusion Detection Systems/Intrusion Prevention Systems, Application Firewalls, etc. Putting servers in DMZ zone, implementing client-server antivirus infrastructure, restructuring of the network, log analysis, security incident monitoring, etc. have ensured better protection. The Web Security Gateway solutions have been implemented for secured Internet access. SSL encryptions are made for critical web applications.

Video Conferencing Services

Multipoint Video Conferencing (VC) hardware is being used for conference purposes at NIMHANS. Any user connected through National Knowledge Network (NKN) or Internet can conduct high definition quality VC in point-to-point or multipoint conference by using their VC devices. Virtual Class Room has been setup through NKN and weekly training programmes has also been started using third party software, where users can take part in a programme by using their laptops, smart phones, tabs, etc.

Projects and Training

The BME section offers various training programmes to undergraduate and graduate-level students and encourages them to undertake projects in the area of Biomedical Engineering. The students can take up interdisciplinary projects for a (minimum) duration of three to 10 months. During the review period, BME trained six engineering students in the Biomedical Engineering domain for their final-year projects and four MTech Biomedical students for their projects in the interdisciplinary domain. A separate training programme on testing and calibration of medical equipment was conducted in collaboration with Ms. Helix India Pvt Ltd. for four MTech (Biomedical Engineering) students. To register for short term and long term projects, enquiries can be sent to biomed@nimhans.ac.in or sindumg@nimhans.ac.in

The Engineering Department caters for the maintenance of hospital infrastructure, administrative building, staff quarters, roads, machinery and equipment like air-conditioners, lifts, generators, etc. The activities are covered under plan and non-plan head of account.

Some of the major civil and electrical works completed in the year 2016-17 include: (a) Construction of Cyclotron building (b) renovation of second floor of Men’s hostel (c) installation of air conditioning systems at Medical Cyclotron facility and construction of manifold room at the rear side of cyclotron building (d) construction of retaining wall, general and biomedical waste separation yard adjacent to STP on the hospital campus (e) renovation of existing seminar hall attached to the Department of Radiology at the Faculty Block (f) construction of shed behind Biomedical Engineering (BME) building to accommodate workshop and lumber room (g) up-gradation of telemedicine facility (h) providing ductable split AC at Neurobiology Research (i) construction of Intra Operative MRI building.

Other important works which are under progress include: Construction of state-of-the-art Sub-specialty Block at Neuro Centre, three floors over the existing Kabini hostel dining hall to provide additional accommodation to Nurses hostel, second floor over the existing first floor of BME section, Type III quarters on Byrasandra campus and renovation of Child Psychiatry OPD and Library and Information Centre.

The Library & Information Centre continued its efforts to provide more and more scientific resources in electronic form to NIMHANS users. The library subscribed to nearly 5200 journals in addition to data bases and clinical materials in e-form. Online access was provided to the entire resources of the library through IP based campus network spread over 2000 access points across the campus, with mega speed internet line of National Knowledge Network (NKN).

Off campus access to e-resources through EZProxy has been continued. The Cyber Hall at the centre has been empowered further with latest sets of computers and equipment for speedy online access. The library web page continued to provide ready to access links to all the subscribed electronic journals individually (A-Z), in addition
to publisher/aggregator wise e-journals, speciality collection databases and other e-resources, including e-books.

Library orientation and e-resources access awareness training and guidance programmes were arranged periodically to the user community to enable maximum utilization of library e-resources.

The existing LIBSOFT from the Environ Software has been upgraded to provide accelerated automation of library services including OPAC, circulation with barcoded library membership cards, and auto reminders of issue and return of books and journals (print) on the users’ mobiles and emails.

Usage statistics of library resources

Books and journals (print) circulated 6402
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Number of external users of the library 4202
Literature search 270
Number of cyber hall users 2777
Full text article downloads 181436
No. of pages of photocopying 10211

Subscription of resources

Print journals

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e-databases

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Special Themes

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Further automation of library operations and starting of an institute repository will continue. Development of consortia of medical libraries related to mental health and neurosciences, at least in Karnataka, will be pursued. Optimization of usage of library space will be taken up along with development of a board room with facilities for video conference at the library premises. The centre will continue to subscribe to Turnitin – software for plagiarism check, and make it compulsory for students to include a plagiarism check certificate in their theses/dissertations. The reading room of the library wherein users can bring in their own reading material and study is increasingly becoming popular. Therefore, the library committee, in the meeting held during the year under review, resolved to develop this facility with better seating, lighting arrangements and total Wi-Fi connectivity. It was also decided to provide storage space (open storage with larger space) for the users. It was also resolved to develop a video-conference facility at the library with latest technology. This room can also be used for conducting seminars and symposia involving 15 or less members. The facility will be developed with interactive digital Wi-Fi communication board with complete Wi-Fi connectivity.

Publication Department

The Department of Publication continued to provide an efficient system for disseminating knowledge about mental health and neurosciences through various specialised services and other important activities during the review period. It facilitated publication of books, teaching manuals, technical reports and other important documents for academic and administrative purposes.

Manuals/Handbooks/Scientific publications: In 2016-17, the department undertook copyediting and proofreading—and coordinating the printing—of the following publications: Manual on Counselling Skills for Teachers of Industrial Training Institutes; Standard Operating Procedures in Neuro-Nursing for Diagnostic and Interventional Surgery; Practice & Use Self-Help for Depression (Push-D) Workbook; Psychosocial Care and Support for Children and Adolescents Living with HIV/AIDS; Psychosocial Care in Disaster Management: Trainer's Manual and Guide.

Institute Reports: The Annual Report 2015-16 (both in English and Hindi) was successfully brought out by the department, under the aegis of the Co-ordinating Committee formed by the Director. The Institute Activity Reports—which present comprehensive information of the Institute’s activities, developments and achievements—were also generated for Governing Body and Academic Committee Meetings held during the period under review.

Information Materials: Copyediting/prooﬁreading of leaflets, ﬂyers, prospectus and other vital information materials were carried out. Printing and publishing of Convocation materials were also handled by the department.

Language Classes: The department organised Kannada classes in association with the Kannada and Culture Department, Government of Karnataka, for the beneﬁt of non-Kannada speaking faculty, staff and students. English classes for BSc Nursing (I year) students were also coordinated by the department.

Other Activities: Certificates for consent forms (to be presented to the Ethics Committee) of various research activities were issued after comparing/checking the veracity and correctness of the translated forms with the original version(s). Publications storage and inventory management, translation of notices and vital administrative communications into regional language, coordinating translation works with the Institute of Translation Studies, checking name boards/signboards, rubber stamps, etc. were the other activities carried out on a regular basis.

Hindi Cell

Hindi Cell, functioning under the Publication Department, undertook various activities under the guidance of the Department of Official Language, Union Ministry of Health and Family Welfare, Government of India with a view to ensure compliance with the Official Language Implementation policies and Constitutional provisions, and to promote progressive use of Hindi for the ofﬁcial purposes.

Translation Activities: Consent forms for research/academic activities, tender notifications, and other important correspondences were translated into Hindi, on a regular basis.

Correspondence in Hindi: Letters to offices of the Central Government, located in regions ‘A’, ‘B’ and ‘C’, as classiﬁed by the Ministry, were issued in Hindi to the extent possible. Ofﬁcial documents pertaining to the Ministry were being signed by the Director and Registrar in Hindi.

All name boards and sign boards of the Institute have been displayed in trilingual format (English, Hindi and Kannada). Thought for the Day was written in Hindi and English, every day, on the display boards at Ashwini Block and Neuro Centre for the beneﬁt of employees/hospital staff and to facilitate learning of Hindi.
**Hindi Training:** Hindi course/classes (Probodh, Praveen and Pragya), under the Hindi Teaching Scheme, were conducted regularly to impart training of Hindi to the employees of the Institute who do not possess the working knowledge of Hindi. Hindi Typing and Hindi Stenography training was also provided under the scheme.

**Hindi Week Celebrations:**

Hindi Week was celebrated at NIMHANS in the month of December 2016. A three-day official language workshop (by Shri. M.P. Damodaran, Deputy Director (Official Language), Coffee Board, Bengaluru and Smt. Indu, Assistant Director, Hindi Teaching Scheme, Kendriya Sadan, Bengaluru) and various other competitions such as essay writing, debate, noting and drafting, singing, etc. were organised as part of the Hindi Week celebrations.

Valedictory Function of the Hindi Week Celebrations 2016 was held on 28 December 2016. Dr. Sohan Lal, Asst. General Manager (Official Language), Canara Bank (HO), Bengaluru & Member Secretary, TOLIC (Banks), was the Chief Guest. The Chief Guest, in his address, spoke about the importance of Hindi as a language and medium of connectivity, and emphasized the need to popularise the language in official transactions. Prizes to the winners of various competitions held as part of the Hindi Week Celebrations and certificates (of attendance) to the participants of the Hindi Workshop were distributed on the occasion.

**NIMHANS Gymkhana**

The NIMHANS Gymkhana is a recreational and sports facility provided exclusively to the staff, students and their families. Situated on Byrasandra campus of NIMHANS, Gymkhana has been built in an area of 2,535 sqm with a plinth area of 10,320 sqm. The Gymkhana has the state-of-the-art facilities and equipment for sports, physical activities and recreation. It has multiple facilities for various indoor games like badminton, table tennis, carom, chess and basketball. It also has creche, library, men and women gymnasium wings, locker rooms, utility/yoga room, amphitheater, and a community hall.

Gymkhana, recreation facility, was created for the staff and students of NIMHANS since 2000. This complex began with the few facilities such as shuttle badminton court in 2000. Over the years, several new facilities were introduced such as well-equipped Gymnasium; trained professionals available three times a week for Gym, Zumba/Mixed Martial Arts for both adults and children of staff and students. Highly furnished facilities are also available for the Basket Ball, Volley Ball, Throw Ball, Carrom and Chess games. Artists in the campus are trying to identify and train artistic aptitude of the children above 5 years.

Indoor/outdoor sports and cultural competitions were held for the staff and students of NIMHANS. Various competitions for undergraduate students were held from 23 November to 17 December 2016. Sports events for the staff and post-graduate students were conducted from 9 January to 10 February 2017.

Apart from holding sports and cultural activities, Gymkhana, in an effort to encourage academic excellence, presents cash awards to meritorious students by presenting and distributes free note books to the children of the staff.

Various new initiatives were unveiled and infrastructure expanded during the year under review. CCTV surveillance systems to cover the whole of the Gymkhana premises were installed. The community hall has been upgraded with new furniture and additional facilities. Infrastructure of the Creche run by the Gymkhana has been expanded and new playing articles for children, microwave oven, stove, etc. have been procured. Art classes (including dance) for children above five years of age and training in Zumba and Mixed Martial Arts (MMA) for both adults and children of the staff and students of the Institute have been initiated.
RESEARCH ACTIVITIES
1. Purinergic signaling in astrocytes: Implications in pathophysiology of epilepsy. Investigator: Dr. Preeti G Joshi (Funding by DBT)

Epilepsy is characterized by hypersynchronous neuronal firing. Traditionally the primary focus of research on pathophysiology of epilepsy has been neuron centric and several factors from ion channel mutations to brain injury have been implicated in hyper excitability of neurons but the early cellular events that initiate a seizure are largely unknown. Astrocytes have emerged as active partners of neurons which can sense, process and regulate the neuronal activity. The investigators have studied the physiological changes in astrocytes under epileptogenic conditions using in-vivo rat model of epilepsy. A short duration epileptic discharge in rats causes significant changes in astrocytes of hippocampus. Within one hour of status epilepticus astrocytes manifest hypertrophy, up-regulation of glial fibrillary acidic protein (GFAP) and purinergic metabotropic receptors (P2Y1 and P2Y2). Astrocytes communicate within their own network and with neurons via Ca^{2+} signals. P2Y receptors play a central role in such cross talk. The spontaneous as well as receptor induced Ca^{2+} signals were drastically enhanced in epileptic rats. The spontaneous Ca^{2+} hyperactivity in astrocytes was independent of neuronal hyperactivity. Activation of P2Y2 receptor with its specific agonist UTP, astrocytes elicit a large Ca^{2+} signal and the neuronal activity was significantly enhanced. The frequency as well as the amplitude of EPSCs is enhanced significantly in control rats but no significant effect was seen in epileptic rats. Activation of P2Y1 receptors in astrocytes inhibits the neuronal hyperactivity in epileptic rats. Thus P2Y receptors in astrocytes appear to play dual role in epileptogenesis.

2. Glutamate transport and signaling in spinal cord astrocytes. Investigator: Dr. Preeti G Joshi.

Glutamate induced excitotoxicity has been recognized as a major factor contributing to progressive degeneration of motor neurons in Amyotrophic lateral sclerosis (ALS). Astrocytes actively participate in glutamate homeostasis at synapse by synthesis, release and uptake of glutamate. In the spinal cord, the motor neurons are located exclusively in the ventral horn. To understand the selective vulnerability of motor neurons in ALS, the glutamate handling properties of astrocytes were investigated in the ventral and dorsal horns of rat spinal cord. It was observed that the expression of glial glutamate transporters EAAT1 and EAAT2 in the ventral horn is much less as compared to dorsal horn and it further reduces in higher age groups. The glutamate induced current was extremely low in the ventral horn astrocytes. The data suggest that the astrocytes surrounding the motor neurons have less efficient glutamate transport capability which contributes to enhanced vulnerability of motor neurons to excitotoxicity.

3. Structure based drug discovery of potent Keap1 inhibitors: A new therapeutic drug target in neurodegenerative disease. Investigator: Dr. B Padmanabhan (Funding by ICMR)

The Keap1-Nrf2 pathway plays an important role in cellular level homeostasis through curbing of ROS plasma concentration levels,
an essential manifestation in neurodegenerative disorders. Of the 6378 approved drugs of ZINC Drug Database and 21,617 biogenic fragment-like compounds of Zbc-Frags database, top 19 compounds and top 5 fragments were tested for MD simulations for good binding with the protein, Keap1-DC. Shape screening process for further lead mining from other databases is in process. The compounds need to be procured for further biochemical validation. Previously procured compound database was screened through the Surface Plasmon Resonance (SPR assay). In binding studies, the investigators got three initial hits. For all three inhibitors, kinetic studies were performed and $K_D$ values determined in the range of 200µM.

4. Insight into the intermolecular interaction mechanism between Nrf2 repressor, Keap1 and Cullin3: Implications for oxidative mechanisms in Parkinson’s disease. Investigator: Dr. B Padmanabhan (Funding by DST)

5. Structure Based Approach to Discover and Develop Potential Inhibitors for the BRD2 Bromodomains and Delineate their Effects in Neurodegenerative Models. Investigator: Dr. B Padmanabhan (Funding by DST)
Last year, the investigators had already achieved the ultra-high resolution crystal structure of (PDB Id: 5IG6) of a potential BDR2(BD2) inhibitor L10 in complex with BRD2(BD2). Further confirmation of the binding of L10 towards hBRD2(BD2) was done by co-crystallization of the scaffold of L10 (namely phenanthridinone) (Fig. 1a) alone with BRD2(BD2). The crystal structure coordinates of BD2-phenanthridinone have been recently deposited (under review with RCSB).

In order, to optimize the binding affinity of the hBRD2(BD2) towards L10, In-silico attempts are being made to design L10 analogues (Fig. 1b). They have been assessed for their stability in the BD2 binding site by means of MD simulations (30 ns) in Desmond (Schrodinger).

In parallel, the protocol for BD1 cloning, expression and purification was successfully standardized in the laboratory (Fig. 2 and Fig. 3). BD1 apo-crystals (Fig.4) were obtained and diffracted at BM14U beamline in 2016, October at ESRF, Grenoble to about 1.6Å.

6. Structure-functional analysis of human SIRT1 and discovery of pharmaceutically acceptable SIRT1 modulators. Investigator: Dr. B Padmanabhan (Funding by DST)

Sirtuins are the anti-aging proteins conserved in all kingdoms of life starting from bacteria to human with almost similar structure and catalytic functions. Class III HDACs are the enzymes that catalyses NAD+ dependent deacetylation and involved in other processes such as ribosyltransferase, demalonylase, and desuccinylase activities. SIRT1 and SIRT2 are also found in cytosol, where they deacetylate nonhistone proteins. Sirtuins show pro-survival function by blocking apoptosis and Sirtuins increase cell survival through regulation of FOXO transcription factors. Many SIRT1, SIRT2 crystal structures of sirtuins catalytic cores revealed the conserved structure of the catalytic domain with N- and C-terminal extensions varying in sequence and length. The inhibition of SIRT2 and the activation of SIRT1 found to show cell survival effect in case of neurodegenerative diseases. In this regard, few indole compounds were tested for their effect on SIRT1 and SIRT2 activity. The inhibitory activity of the predicted compounds is confirmed by an in-vitro deacetylase assay.

7. Structure function analysis of TULP3 (Tub like protein 3) as a SIRT1 interactor. Investigator: Dr. B Padmanabhan.

The genes that encode three tubby-like proteins (TULP1- TULP3) form a novel, small gene family that plays an important role in maintenance and function of neuronal cells during development and post-differentiation. The causative gene Tub which is found throughout the animal kingdom is the founding member of this family of related proteins. Each protein is characterized by a signature carboxy-terminal tubby domain that consists of a barrel enclosing a central helix and binds selectively to specific membrane phosphoinositides. In the best-characterized example, the TULP3 amino terminus binds to the IFT-A (intraflagellar transport), a complex important in intraflagellar transport in the primary cilia, through a short conserved domain. Tub like proteins are present in all multicellular organisms. The genetic mutation of TULPs can result in one or more of three disease phenotypes: obesity, retinal degeneration, and hearing loss. SIRT1 is also well known for its activity in many neuronal disorders and least information is known about the functional importance SIRT1 and TULP3 interaction. Hence the co-expression studies will give more
experimental evidence to the interaction. To study the structure of TULP3, gene cloning was done using pET vector and expression of protein was checked in BL21 strain. Recombinant protein was purified using Ni-NTA affinity purification. The final recombinant protein with his-tag was obtained from the ion-exchange chromatography. Using this protein crystallization screening was done to get crystal conditions.

SIRT1 and TULP3 binding was shown in one of the previous studies by high throughput MS analysis. However, there is no further evidence available till the date. Thus, SPR experiment to prove SIRT1-TULP3 interactions was performed.

Fig. 1. Pure protein of TULP3 after ion-exchange chromatography

Fig. 2. crystals of TULP3 in two different conditions

Fig. 3. Sensogram for the interaction of SIRT1-TULP3

8. Structural-Functional Analysis of SOD1 Associated with fALS. Investigator: Dr. B. Padmanabhan.

Superoxide Dismutase 1 (SOD1) is an enzyme involved in detoxification of superoxide radicals. The mutation in the gene causes amyotrophic lateral sclerosis (ALS) (Mi-ichi, 2011). It is inexorably progressive with 70–80% of patients dying within five years of the onset of symptoms. Over 160 ALS-related mutations have been identified. The mutation of SOD1 leads to toxic gain-of-function because of which protein gets aggregated and causes motor neuron death in the early stages of the diseases. Mutated SOD1 also leads to ER stress and mitochondrially- mediated apoptosis (Soo, 2012). Stabilization of the SOD1 dimer can increase the protein’s thermostability and thus, preventing monomerization and inhibit aggregation. Since stabilization of the dimer is a method for therapeutic intervention, many compounds that have a putative capacity for binding SOD1 in a hydrophobic cavity in the dimerization region have been shown to have potent aggregation inhibition activity. So far, none have been validated by direct observation in situ. Hence, developing potential library compounds to stabilize the SOD1 dimerization are in need for the treatment of ALS. SOD1 gene was cloned to pET-14a vector and protein was expressed in bacterial system and purified to get soluble form by chromatography techniques.

Fig. 1. Diffraction pattern of SOD1-Compound #25 complex

Fig. 2. Binding position of L25 in crystal structure

Fig. 3. Sensogram for the SOD1 binding with L25

This protein was concentrated to 10mg/ml concentration and used for crystallization screening. Ligand-protein complexes as well as apo
crystal structures were found to be diffracted up to 2.0Å with novel space group (P 6322). Further binding analysis was done by SPR with a BiacoreT100 (GE healthcare) instrument using dextran-coated chips. SPR showed the binding for the compounds #27, #17 and L10. Further aggregation assay and CD spectral analysis was done to validate the compound as aggregation inhibitor.

9. **Tryptophan oxidation of myogenic proteins in neuromuscular diseases.** Investigators: Dr. B Padmanabhan, Dr. MM Srinivas Bharath

The mass spectrometric studies have revealed the presence of tryptophan oxidation in the mitochondrial proteins studied in CTX model of muscle degeneration.

- **2GMH**: Porcine electron transfer flavoprotein-ubiquinone oxidoreductase in complex with ubiquinone. (W246) [Oxidation state: +16 – Oxindolylalanine]
- **1SQB**: Bovine cytochrome bc-1 complex subunit1, mitochondrial precursor. (W395) [Oxidation state: +16 – Oxindolylalanine]

The above two proteins are integral mitochondrial membrane proteins embedded with the inner membrane of the mitochondrial double membrane. The controls and mutated structures of the proteins were prepared and relaxed through a specialized protocol under Schrodinger MD module, Desmond, for membrane embedded proteins. The production MD run for the structures were performed till 50ns. The effects of the tryptophan oxidation on the overall protein conformation and specifically the variations with ligand binding and various other structural parameters were studied.

Parkinson’s disease is characterized by selective loss of dopaminergic (DA) neurons in the substantia-nigra (SN) of the midbrain-region and not in the ventral-tegmental area and other catecholaminergic cell-group areas. Post-mortem analysis suggests that the main difference between these two regions of the brain having DA neurons is the density of astrocytes. Although astrocytes throughout the central nervous system (CNS) share many common traits, reports suggest heterogeneity in terms of expression of membrane transporters, channels, neuropeptides and gap junctions. The significance of region specificity and optimum density of astrocytes in constituting the endogenous microenvironment of DA neurons is yet not elucidated.

Till date, therapies targeted at the restoration of striatal dopamine fail to slow the progression of the disease and increasingly stem cell (SC)-based therapies are getting considered as viable alternatives. Due to inaccessibility and low availability of human neural SC, adult tissue-derived SCs are considered as plausible approach. In the present study, the investigators therefore first aim to understand the role of astrocytes in the survival of DA neurons using an in vitro primary midbrain DA neuron culture model and further elucidate the role of undifferentiated and differentiated MSCs in mimicking the supportive action of astrocytes on the survival of DA neurons. The investigators have isolated, purified and differentiated astrocytes from three different regions of neonatal brain and characterized for glial markers through flow cytometry. Moreover, a sequential culture technique is established by changing dimensionality to generate...
neuron-glial ratio akin to in vivo adult midbrain. The effect of density and region-specificity of astrocytes on DA-neuron survival has been estimated and the neuro-rescue mechanism has been investigated.

11. Generation and characterization of induced pluripotent stem cells from peripheral blood cells of Schizophrenia patients – a cell-resource to derive neural progenitors. Investigators: Dr. Indrani Datta, Dr. G Venkatasubramanian (NIMHANS Intramural Funding/Grant)

Representative phase contrast images showing the colony formation for iPSCs generated from PBMCs. Cells were cultured in PBMC medium. On day 0 (A) cells were transduced overnight with KOS, hc-Myc, hKlf4. At day 3 (B), the cells show morphological changes indicating reprogramming and are plated on MEF feeder layers. The cells are allowed to proliferate on MEF feeder layers and colony formation is observed from day 8 onwards (C).

Representative micrographs of emerging colonies from reprogrammed PBMCs. The hiPSCs were passaged manually. The passage 1 & 4 images are represented in (h) and (i). Alkaline phosphatase staining of live colony is represented in figure (j).

Induced pluripotent stem cells (iPSCs) can provide a platform as an in vitro patient-specific disease model to understand etiology of rare and/or complex diseases and develop novel therapeutic interventions.

Schizophrenia (SZ) is one such disease where the clinical disposition is diagnosed during late adolescence but the predisposition and initiation is believed to be earlier during childhood due to an aberrant neurodevelopmental condition (Weinberger et al., 1987; White et al., 2006). Therefore, an individual, patient-specific, cell-based disease model is critically needed for high throughput screening that may help in identifying new therapeutic strategies for treatment of the disorder. Conventionally, iPSCs have been developed from human fibroblast cells but recent studies have reported iPSCs from other somatic cell types including lymphocytes, mesenchymal stem cells, and mobilized CD34+ cells (Yu et al., 2007; Takahashi et al., 2007; Loh et al., 2009; Aasen et al., 2008). Due to their commercial availability and ease of gene delivery, fibroblasts are the preferred cellular choice for reprogramming, but the need for invasive biopsies and the difficulty of establishing stable cell lines from primary culture limit their utility. Moreover, skin cells harbor more mutations than cells from inside the body, due to environmental insults such as UV radiation (Abyzov et al., 2012). Considering these limitations, cells obtained from peripheral blood are currently accepted as the best choice. Peripheral blood mononuclear cells (PB-MNCs) can be used to generate iPSCs by reprogramming them with Yamanaka’s pluripotent factors Oct3/4, Sox2, Klf4, and cMyc. In the present proposal, the investigators aim to use integration-free reprogramming methods containing reprogramming factors Oct3/4, Sox2, Klf4, and cMyc to generate iPSCs from lymphoblastoid cells. At present PB-MNCs from healthy individuals are isolated and put for reprogramming.

12. Development and assessment of human embryonic stem cell derived neural progenitors as a model for hypoxic-ischemic like injury - Implications for Hypoxic Ischemic Encephalopathy (HIE). Investigators: Dr. Indrani Datta, Dr. Ramesh Bhonde (Funding by CSIR)

(A) Representative phase contrast images of neural progenitors differentiated to oligodendrocyte progenitor cells and oligodendrocytes. (B) Representative immunofluorescence images of neural progenitors immunolabeled for Nestin, A2B5 and Musashi12: oligodendrocyte progenitor cells for A2B5; and oligodendrocytes showing for myelin binding protein (MBP).
13. Early signatures of synaptic function decline in diabetic retinopathy. Investigators: Dr. Bhupesh Mehta, Prof. Preeti G Joshi (Funding by DST)

Diabetic retinopathy is a major complication of diabetes. It is difficult to determine which patient is at the risk of developing retinopathy. Earlier it was considered a vascular disorder but now it is being linked with neuronal dysfunction. In this project, changes in the functioning of ribbon synapses of the rod pathway in retina with the progression of diabetes will be investigated. The correlation between the defects in the synaptic properties and the changes in the electroretinogram (ERG) recordings will also be examined. If such correlation is established, it may culminate into a procedure to detect early signs of retinopathy with non-invasive procedure of ERG recordings which can be of direct clinical use.

14. Decoding protein deacetylase network in the synaptic physiology of excitatory epileptic hippocampal neurons. Investigators: Dr. Bhupesh Mehta, Prof. Preeti G Joshi

Histone deacetylases (HDACs) are a group of enzymes that remove the acetyl group from the nuclear histone. HDACs also interact with several non-histone proteins that include transcription factors and signal mediators. Several isoforms of HDACs are known, showing localization in the nucleus, cytosol, or in both. When stimulated, some of the HDAC isoforms shuttle between the nucleus and the cytoplasm.

Recently, HDACs have been linked to GABAergic neurotransmission, synaptogenesis, synaptic plasticity, and memory formation, and its inhibitors are being tested as novel therapeutics for several neurodegenerative disorders, including those with defects in synaptic transmission. In this proposal, the investigators speculate important role of cytosolic HDACs in excitatory synaptic transmission in the hippocampus of rats. The investigators also intend to make a comprehensive localization map of cytosolic HDACs and of synaptic proteins acetylated in both an in-vivo and an in-vitro model of temporal lobe epilepsy.

15. To investigate the molecular mechanism of Alzheimer’s disease in patient specific iPSC-neurons. Investigator: Dr. Yogananda SM

Alzheimer’s disease (AD) is an age dependent neurodegenerative disease, associated with progressive decline in memory, thinking and eventually the ability to carry out simplest things. The neuropathological hallmark of AD is accumulation of amyloid plaque, presence of neurofibrillary tangles, oxidative stress, neuroinflammation and neuronal loss. Disturbance in calcium homeostasis is a key mechanism in pathophysiology of neurodegeneration in several rodents models of AD. However, rodent model will not demonstrate full spectrum of AD instead it only recapitulates a specific aspect of disease. Therefore, the major focus of the is on neurons generated from human iPSCs, obtained from AD patient. Using live cell calcium imaging and single cell patch clamp technique, role of transmembrane calcium channels (NMDA receptor, voltage gated calcium channels, A-pore) and downstream signaling events is being studied. The study will help us in understanding the molecular mechanism of AD in a patient specific manner.

16. Understanding the role of caveolins in neuroprotection using human iPSC derived neurons. Investigator: Dr. Yogananda SM

Glutamate is the principle excitatory neurotransmitter in the central nervous system involved in synaptic transmission through ionotropic and metabotropic receptors. Excessive stimulation of ionotropic glutamate receptors leads to excitotoxic neuronal death accompanied by excessive calcium influx into the neurons. Excessive accumulation of intracellular calcium is the major cause of neuronal injury. Caveolins are a family of integral membrane proteins nearly 17-24kDa in size, that exist in three isoforms (Cav-1, -2 and -3), Cav-1 and Cav-2 are expressed in almost all cell types including neurons. Caveolins are colocalized with the post synaptic membrane and the NMDA receptor subtype 2A where they modulate neuronal function. Loss of caveolin-1 expression in neuron associates with Schizophrenia, Huntington disease pathology, impaired functional deficits and greater sensitivity to ischemia. This project is aimed to study role of caveolin in neuroprotection from excitotoxic neuronal death. The findings of this project will provide new therapeutic targets for neurodegenerative disease.
Students:

17. Neuron-astrocyte interaction in relation to excitotoxicity in spinal neurons. Ms. Shiksha Sharan. Guides: Dr. Preeti G Joshi, Dr. A Nalini, Dr. Bhupesh Mehta (Funding by DST–Inspire Fellowship)


Oxidative stress and Neuroinflammation are considered to play a critical role in the pathogenesis of a wide variety of both acute and chronic neuropathogenesis, including Amyotrophic Lateral Sclerosis (ALS), Alzheimer’s Disease (AD), and Parkinson’s Disease (PD). Therefore, the study aims to develop neuroprotective therapeutic strategies to blunt these processes. Nuclear factor E2–related factor 2 (Nrf2) is a transcription factor known to induce expression of a variety of cytoprotective and detoxification genes. In this regard Keap1 (Kelch-like ECH-associated protein 1) is the potential molecule to regulate Nrf2 function and hence a molecule of interest in NDD (Neurodegenerative diseases). Localization of Keap1 plays a major role in maintaining the basal level of Nrf2, since it targets Nrf2 for degradation. One of the strategies could be designing an inhibitor molecule which will interact with cytosolic Keap1 and in turn activation of Nrf2/ARE pathway.

19. Rational approach to drug discovery and development of modulators of Keap1-Nrf2 system and human SOD1: Potential therapeutic targets against neurodegenerative diseases. Ms. Sruthi Unni. Guides: Dr. B Padmanabhan, Dr. MM Srinivas Bharath

Keap1 belongs to the Kelch-BTB family of proteins that help in cell housekeeping during redox condition. In such situations, Keap1 inhibition is an important strategy to promote the upregulation of the expression of cytoprotective genes by activating the Nrf2 transcription function. Keap1 contains three domains, namely BTB, IVR and Kelch.

Fig. A Ribbon representation of the beta propeller domain of Keap1; B The surface representation of the Keap1-DC domain with the Nrf2 peptide sequestered (PDB Id: 2FLU). C Ribbon representation of the BTB dimer of Keap1.

20. Structural Biology of the Keap1-Nrf2 Defense System and the Epigenetic Markers, BRD2 & BRD4: Novel Drug Targets for Neurodegenerative Diseases. Mr. Prashant Vasant Deshmukh. Guides: Dr. Padmanabhan B, Dr. Nandakumar DN, Dr. S Thiyagarajan

The maintenance of cellular homeostasis is vital for the cells to function normally and efficiently. The cells abnormal functioning leads to various disease conditions. The Keap1-Nrf2 system plays a central role in the protection of cells against oxidative and xenobiotic stress. The Nrf2 is an essential transcription factor in the cells cytoprotective mechanism and its level negatively regulated by Keap1 protein. Hence, Keap1-Nrf2 interaction inhibition is important drug target. In this contest, BTB domain, BTB-IVR domain of Keap1 were cloned in the pET28a vector with His-tag and expressed in BL-21 codon plus strain. Further, Ni-NTA affinity purification and gel filtration were carried out to get pure and homogeneous protein (protein purity approx. 95%), and BTB domain crystallization was also performed. X-ray data collection and
structure determination is under progress. In the biochemical assay, Surface Plasmon Resonance (SPR) study was performed to screen the small molecule inhibitors of Kelch domain of Keap1.

A. BTB domain protein purification and BTB crystals

B. BTB-IVR domain purification

C. SPR assay for Kelch domain inhibitors

21. Neuroprotective role of mesenchymal stem cells on neural progenitor cells against hypoxic ischemic like injury. Ms. Sowmithra. Guides: Dr. Indrani Datta, Dr. Bhupesh Mehta

Hypoxic ischemic encephalopathy results in severe brain injury in the newborn due to lack of oxygen and decreased blood flow. The investigators used neural progenitor cells (NPCs) derived from human embryonic stem cells to create an in vitro HI model to evaluate the cellular deregulation and its oligodendrocyte differentiation potential. The neural progenitors will be subjected to oxygen glucose deprivation (OGD) for 90 minutes in the presence of 2% oxygen, 93% nitrogen and 5% carbon dioxide. This OGD phase will be followed by reperfusion phase, during which neural progenitors will be re-exposed to normoxia of 21% oxygen and glucose conditions. The effect of hypoxic ischemia cell proliferation, cell survival, ROS generation, basal cytoplasmic Ca²⁺ and intracellular Ca²⁺ influx in the OGD and reperfusion phase will be estimated in comparison to control neural progenitors. Further, the protective effect of Wharton’s Jelly mesenchymal stromal cell will be evaluated on the NPs and its oligodendrocyte differentiation potential.

Biostatistics

1. Statistical analysis of field and non-randomized sub-study on mission against malnutrition. Investigator: Dr. K Thennarasu (Funding by JSW Foundation)

2. Utility of multidimensional scaling and causal modeling in the interpretation of fMRI data. Ms. PV Prathyusha. Guides: Dr. DK Subbakrishna, Dr. K Thennarasu, Dr. G Venkatasubramanian

Since its introduction, fMRI is a popular tool to investigate the brain mechanism by measuring BOLD intensity. During an fMRI experiment a sequence of individual magnetic resonance images are generated. Since the measurements are made at basic voxel level, number of problems like the “curse of dimensionality”, multicollinearity, non-independence, the problem of multiple comparisons, fixing of the p-value for statistical significance etc., arises. There is great need for statistical methods to analyse high dimensional, correlated and complex fMRI data. Statistical analyses enable inference of the probability that observed signals are not observed by chance. The study aims at exploring different univariate and multivariate statistical methods for the analysis of the fMRI data and to integrate the results with clinical and biological parameters.

Students:

3. Exploration of quantile regression methods and their applications in biomedical research. Mr. Ravi GS. Guides: Dr. K Thennarasu, Dr. Vani Santosh
4. A comparative study on imputation techniques in incomplete data analysis. Ms. Seena Thomas K. Guides: Dr. K Thennarasu, Dr. Mariamma Philip

Missing data is a common problem in statistical data analysis and the common method of handling the missing data is to discard the case with missing data or impute the missing places. The traditional methods of imputation have been widely accepted but sometimes they can lead to biased results. The modern methods for handling missing data have better statistical properties. The objective of the study is to compare the modern techniques of imputation namely Multiple Imputation, Quantile Regression Imputation etc. and to find the efficiency of these methods under various conditions using simulation technique and publically available data.

5. A study on poisson and negative binomial regression models for count data in biomedical research. Mr. Adhin Bhaskar. Guides: Dr. K Thennarasu, Dr. Mariamma Philip

Many a time, the research questions on outcome in the field of biological, behavioral science, epidemiology, insurance, etc. are likely to have a count nature. In recent times, the development in various advanced modeling methods highlight the necessity for the use of appropriate method for count data. This study attempts to assess the performance and efficiency of different count regression models in specific situations with special reference to the field of biomedical and behavioral research. The study compares different count regression models such as, Poisson, negative binomial, zero inflated models and hurdle models using real life and simulated data.

6. Comparison of probit and logistic regression in fixed effects and mixed effects models. Ms. Amrutha Jose. Guides: Dr. Dr. Mariamma Philip, Dr. Manjula M

The probit and logit models are generally used to predict the factors influencing the dichotomous outcome variable. The study is designed to evaluate the efficiency of probit and logistic regression analyses in and between fixed effects and mixed effects models under different parameters, varying sample sizes and cluster sizes with a range of intra-cluster correlations which will provide an evidence to propose appropriate method under various situations. The study is also designed to gain in depth knowledge about the effects of separation as well as the ways that deal with the issue, since such data sets analyzed by logistic/probit regression models need more attention.

7. Survival analysis and the related prognostic factors of post-operative posterior fossa tumour using statistical modelling. Ms. Mini Jayan. Guides: Dr. P Marimuthu, Dr. Dhaval Shukla, Dr. B Indira Devi, Dr. B Binukumar

The aim of the study is to construct an efficient survival model of the Post-operative Posterior Fossa tumor patients and to estimate their survival time. The specific objectives are to develop and compare different survival models and to estimate the Survival function and Hazard function for the same, to estimate the Prognostic factors associated with the Hazard function and to validate the models using Simulation under different censorship levels and sample sizes. The data is collected from NIMHANS Neurosurgery Department’s OT register and medical records. The follow-up of the patients is done through telephone or in its absence through post.

8. Statistical methods in network meta-analysis and their applications in behavioral research. Mr. Palash Kumar Malo. Guides: Dr. B Binukumar, Dr. Muralidharan K

Studies on network meta-analysis have been steadily rising in recent years in various research areas. Most of the literatures suggest that researchers are still using conventional technique for multiple outcomes by considering separate network meta-analysis for each outcome. Further, multiple outcomes are usually correlated and ignoring it from the analysis may introduce bias and the results can be misleading. Hence, this study aims to explore and assess the performance of different univariate and multivariate statistical methods for the analysis of connectedness of networks in randomized controlled trials with the special reference to the field of behavioral research.

9. Application of latent growth mixture modeling approach in longitudinal behavioral research. Mr. Aakash Bajaj. Guides: Dr. K Thennarasu, Dr. Prabha S Chandra, Dr. B Binukumar (Funding by ICMR)

This study aims to apply latent growth modeling approach to behavioral research by identifying the latent group trajectories for the characters of maternal mental health using latent growth modeling approach. These subgroups are expected to follow different growth trajectories with respect to mental health characteristics. Identification of such groups helps in understanding the population of expecting mothers. The subgroups can be compared with respect to the socio-demographic and other covariates. Further, the study aims to find the early predictors of maternal mental health trajectories based on classification techniques.

Human Genetics

1. Effect of small molecules on the survival of human brain and nervous system tumor cells in vitro. Investigator: Dr. Rajalakshmi Gope

In this study, the effect of small molecules on the modulation of the level and post-translational modification(s) of RB1 and p53 gene
products in human intracranial tumors in vitro were investigated. The results indicate that the small molecules modulate the post-translational modifications such as site-specific phosphorylation of pRb and p53 proteins. These small molecules also affect the expressions of a range of cell survival/cell death genes in the treated samples. The data shows that the small molecules facilitate cell death pathway in the brain tumor cells in a p53 dependent or p53 independent manner based on the brain tumor type and p53 gene mutational status. The results could lead to the development of small molecules such as sodium butyrate as possible therapeutics to manage the human brain and nervous system tumors.

2. **Effect of aluminium chloride on the p53 gene expression in mouse brain. Investigator: Dr. Rajalakshmi Gope**

Aluminum affects expression of genes involved in neuronal function and signaling. The p53 gene is one of the important genes with multiple functions such as cell cycle, cell differentiation, apoptosis (including neuronal), aging (including age-related neurodegeneration) etc. The present study is aimed to understand the effects of aluminium chloride on the p53 gene expression in mice model. Data from this study shows that oral administration of aluminium chloride modulates the expression of genes involved in cell survival/ cell death pathway in the mouse brain cells. These data could help us understand similar aluminium chloride induced pathophysiological conditions in human.

3. **Expression and regulation of p16 and Bmi1 genes in Human Glioma Progression. Investigators: Dr. Chetan GK, Dr. Dhananjaya I Bhat (Funding by SERB, DST, India)**

Glioma is a broad category of brain tumors that come from glial cells, are the most common primary malignant neoplasms of the central nervous system. So many mutations occur frequently in genes that control cell cycle and proliferation leading to tumor progression. The understanding of the role of bmi1 and p16 tumor suppressor gene in diagnosis of glioma, especially at the transcriptional level is in infant stage. Gene alteration studies of both genes will be helpful for the diagnostic and therapeutic purposes. Main alterations in p16 gene include mutations and transcriptional regulations and deletions in one of the exons. Aberrant methylation of p16 in gene in serum can be an early diagnostic tool in glioma. Analysis of p16 SNPs in Indian population may help to develop personalized medicine. Bmi1 gene amplification and transcriptional and post transcriptional modification will be useful in prognosis of glioma. In this project, we are considering the correlation of alterations in both genes with the clinical data. These genes can be considered as good prognostic and diagnostic markers in glioma especially in the Indian population.

4. **Genetic, epigenetic and biochemical profile of lumbar disc degeneration in Indian population. Investigators: Dr. Dhananjaya I Bhat, Dr. Chetan GK (Funding by SERB, DST)**

Low back pain is one of the most common causes of disability and LDD is a major cause of this. Identification of gene association may provide insight to the etiology and patho-physiology of this disease which in turn may provide information regarding prevention and management. In this study, the investigators propose to identify the genetic variation and the biomarkers of LDD. The plan is to analyse the SNPs of relevant genes in LDD, so as to predict the risk of LDD. The gene polymorphisms which are already attempted in other population and having relevance with degenerative disc diseases are selected for this present study. The biochemical profiling of the LDD helps in the biomarker discovery which is easy to apply in a clinical setup to classify different patient groups. The analysis of the disc tissue for gene methylation and gene expression of SPARC gene will lead to the discovery of the therapeutic targets in LDD. LDD is a common problem in India, which affects the normal activity of young population and, also affecting the development of the society and country. Addressing this serious issue systematically will help in novel diagnosis and treatment which may reduce the burden of the disease in the population.

5. **Understanding the Th17 cytokine-mediated pathogenesis of Guillain Barré Syndrome: An integrative biochemical, genetic and gene expression study. Investigators: Dr. Monojit Deb Nath, Dr. Madhu Nagappa, Dr. Arun B Taly (Funding by SERB, DST)**

Guillain Barré Syndrome (GBS) is an immune mediated acute inflammatory disorder in the peripheral nervous system. The roles of activating, antagonizing and effector cytokines of Th17 pathway are being examined in an integrative approach in GBS. In addition, genetic variation of the genes related to Th17-signaling is being studied to understand whether such genes play any role in determining genetic predisposition to GBS. The data generated from this study suggest important role of the cytokines belonging to Th17 pathway in determining the risk, severity and subtypes of GBS.

6. **The immuno-psychiatry in south India study (IPS) – Immunogenetic and immuno-phenotype characterization of major psychoses. Investigators: Prof. Vir Singh Negi, JIPMER, Dr. Monojit Deb Nath (Funding by Indo-French Centre for the Promotion of Advanced Research)**

Comparison of immune dysregulation in schizophrenia and bipolar disorder in two geographically distinct population groups (French Caucasians and South Indians) encountering distinct environmental factors are being examined in this study. This will provide insights into the genetic and biological heterogeneity of these disorders within and across the studied population-groups, immunogenetic basis of associated auto-immunity, and environmental influences on Human Endogenous Retroviruses-W family in establishing the disease and relapsing the episodes.
7. Effect of Shakti Kriya versus Sudarshan Kriya and Pranayama (SK&P) on electroencephalogram (EEG), gene expression, heart rate variability (HRV), galvan skin resistance (GSR) and quality of life. Investigators: Dr. Vinoda Kochupillai, Sri Sri Institute of Advanced Research, Dr. Monojit Debnath, (Funding by DST-Science and Technology of Yoga and Meditation)

8. Exploring the roles of cytoskeletal protein in muscle differentiation. Investigator: Dr. Mathivanan Jothi (Funding by SERB, DST)

Muscle differentiation or myogenesis is tightly orchestrated by growth factors, myogenic regulatory factors, myocyte enhancing factors, cell signaling molecules, etc. Cytoskeletal proteins also play a major role in muscle differentiation program. Defective myogenic program is implicated in several diseases such as muscular dystrophy, atrophy, hypertrophy and cancer. Till now there is no effective cure for these diseases. Therefore, a clear understanding of myogenic defect in these diseases requires intense research at the molecular level. During differentiation, myoblasts remove their association with cytoskeletal system and establish muscle specific cytoskeletal network. This study is focused to understand the possible roles of the various molecular pathways in the muscle-specific cytoskeletal network during muscle differentiation.

Students:


The study aimed at exploring the functional role of (i) non-classical MHC molecule, HLA-G (that plays a vital role during early neurodevelopment) (ii) pro- (IFN-γ, TNF-α), anti-inflammatory (IL-10) cytokines in SCZ and (iii) growth factor of neuron development, NRG-1 (which possesses crucial anti-inflammatory role in CNS). In addition, influence of feto-maternal compatibility at the functional loci of HLA-G was examined. Further, impact of gene variants on digit ratio and dermatoglyphic parameters (morphologic traits whose developmental period overlaps with the brain development) was assessed. A significant difference in the genotype and allele distribution of 14bp INDEL polymorphism between the patients and controls, with significantly higher frequency of insertion allele in the patients was noted (p= 0.03).

Fig. 1. The mean values of the genetic risk scores were evaluated and the cumulative genetic risk score was significantly higher in patients than controls (p=0.01).

Fig. 2. INS allele of 14bp INS/DEL (p= 0.04) and G allele of +3142 C>G (p= 0.03) was associated with lifetime presence of 3rd person auditory hallucinations. Further, A allele of HLA-G +3187 A>G was significantly associated with FRS (p=0.05).

Fig. 3. Significant interactions between IL-10 genotype and sHLA-G levels were noted in patients. C/C genotype of IL10 -592C>A polymorphism was significantly associated with lower sHLA-G levels in patients (r = 0.30, p=0.04).

10. Role of gene polymorphisms and epigenetic mechanism in aneurysmal sub arachnoid hemorrhage. Ms. Arati Suvatha. Guides: Dr. Chetan GK, Dr. Dhananjaya I Bhat [Funding by DST, Women Scientist Scheme-A (WOS-A)]
Subarachnoid haemorrhage (SAH) is a pathological condition characterized by bleeding into the subarachnoid space which is the area between the arachnoid membrane and the pia mater surrounding the brain. The major focus of this study is on polymorphisms and methylation pattern in key genes (APOE, Factor XIII, MMP9) and its association with the occurrence of aSAH. Although the significance of APOE, FACTOR XIII and MMP9 genes has been studied in various neurological disorders, studies in aSAH are very rare. So in this study, role of gene polymorphisms and epigenetic factors along with clinical parameters in the occurrence of aSAH will be analysed.

11. Study on the influence of O-6-methylguanine-DNA methyltransferase (MGMT) gene on downstream DNA mismatch repair genes in Human high grade malignant Glioma. Ms. Jeru Manoj M. Guides: Dr. Chetan GK, Dr. Narasinga Rao (Funding by UGC-MANF)

Malignant glioma presents with DNA repair failures like methylation of MGMT, a validated prognostic biomarker. Tumor response to RT with adjuvant CT (TMZ) is determined by MGMT and MMR pathway. This study attempted to look into influence of MGMT methylation on the gene expression of hMSH2 and hMLH1. MGMT PoM of 10% and 8% was seen to be a predictive factor for better PFS and OS, respectively. Aberrant correlation between the genes was observed, indicating dysfunctional O6MeG repair. MGMT methylation and low hMSH2 was seen to be a predictive marker. MGMT promoter methylation, GTR and (RT+CT) were validated as significant prognostic biomarkers.

12. Study on the regulation of human T elomerase in Glioblastoma cell lines using knockdown approaches. Ms. CH Lavanya. Guides: Dr. Chetan GK, Dr. Srinivas Bharath MM (Funding by UGC-RGNF)

The study aimed to downregulate the telomerase activity in glioblastoma cell line using various knockdown approaches. The effect of siRNA on telomerase and its expression levels in glioblastoma cell line are studied. Other main objective is to study the effect of telomerase inhibitor BIBR1532 on telomerase and its expression levels in glioblastoma cell line.

13. Immunogenetic investigations of Interleukin-6 (IL-6) abnormalities in Schizophrenia. Ms. Deepthi Venugopal. Guides: Dr. Monojit Debnath, Dr. Venkatasubramanian Ganesan, Dr. Moinak Banerjee (RGCB, Trivandrum) (Funding by UGC)

Schizophrenia is a complex and debilitating neuropsychiatric disorder. Immune dysfunction has been implicated in schizophrenia for a long time. Among several immune factors, interleukin-6 (IL6) plays a significant role; increased IL6 expression both in the periphery and brain is an established observation in this disorder. Multiple evidences point that increased levels of interleukin-6 in schizophrenia patients could be due to polymorphism or epigenetic modifications viz. DNA methylation at the gene promoter. IL6 receptor functional polymorphism was found to be associated with schizophrenia psychopathology. Further gender-wise impact of genetic variation within IL6 gene on its expression was also observed.

14. The role ofTh17-mediated immuno-inflammatory pathway in schizophrenia. Ms. Manjula S. Guides: Dr. Monojit Debnath, Dr. Shivarama Varambally (Funding by UGC-RGNF)

Schizophrenia has recently been linked to chronic low grade inflammation. Th17 pathway plays pivotal role in mediating inflammation and autoimmunity. The present study is aimed at examining the role of Th17 pathway in schizophrenia immunopathogenesis by biochemical, genetic and gene expression studies. The genotyping of IL17 and IL10 genes has been completed in a subset of patients.

15. Understanding the prenatal infection induced immune-mediated risk of schizophrenia in a rat model. Ms. Pinku Mani Talukdar. Guides: Dr. Monojit Debnath, Prof. Bindu M Kutty, Prof. G Venkatasubramanian [Funding by DST, Women Scientist Scheme-A (WOS-A)]

The main aim of this study is to examine the impact of prenatal infection on maternal immune activation in pregnant rats and the subsequent effect of maternal immune activation on immunoinflammatory, oxidative and nitrosative stress (IO&NS) as well as apoptotic pathways in the offspring of mothers challenged with prenatal infection during peri-adolescence and adulthood. The impact of maternal immune activation as well as IO&NS and apoptotic pathways will further be correlated with schizophrenia-like behavioral abnormalities in the offspring during peri-adolescence and adulthood.
16. Guillain Barre Syndrome: Comprehensive profiling of antecedent infectious triggers, genetic predisposition, ganglioside and ganglioside complex autoantibodies. Mr. Debrasad Dutta. Guides: Dr. Monojit Debnath, Dr. Madhu Nagappa, Prof. V Ravi (Funding by ICMR)

Guillain Barre Syndrome (GBS) is the most commonly occurring neuromuscular paralysis. The present study is aimed to delineate the immunogenetical mystery of this neurological malady. This study will address three core questions of GBS pathobiology: How infectious triggers (viruses like Zika, Dengue, Influenza, Chikungunya and bacteria Campylobacter jejuni) determine the risk & progression of GBS? How do genetic variations within TLR genes influence susceptibility to GBS? How do infectious triggers determine anti-ganglioside and GSC complex antibody responses in GBS? Current study will put further effort to understand the tripartite relationship amongst antecedent infections, TLR genes and anti-ganglioside autoantibodies.

17. The quantitative analysis of pro-inflammatory cytokines in Guillain Barre Syndrome. Ms Geetanjali M. Guides: Dr. Monojit Debnath, Dr. Taly AB, Dr. Madhu Nagappa

In this study, vitamin D deficiency was found to be highly prevalent in the elderly, and associated with hypertension. Serum vitamin D [25(OH)D] <12ng/ml was associated with 2.13-fold increase in the odds for vascular cognitive impairment (VCI) which increased to 12.5-fold in vitamin D-deficient hypertensives. Serum cytokines, TNF-α, IL-10, IL-1 and TGF-β correlated with serum 25(OH) D levels. Pro-inflammatory cytokines, IL-1 and TNF-α were significantly elevated in patients when compared to healthy controls. Serum 25(OH) D levels significantly and inversely correlated with IL-1 in vitamin D-deficient patients. Genotyping for variants of Vitamin D receptor (VDR), 25-hydroxyvitamin D 1α-hydroxylase (cytochrome P450 type 27B1 (CYP27B1) and 25-hydroxyvitamin D 24-hydroxylase genes (CYP24A1) were carried out. Among the VDR gene variants, BsmI BB genotype was associated with 1.87-fold increase in the odds for VCI. Genetic variations in other enzymes involved in vitamin D metabolism did not significantly increase the risk for VCI.

3. Genetic determinants of platelet response to low-dose aspirin therapy. Investigators: Dr. Rita Christopher, Dr. SR Chandra (Funding by ICMR)

Platelets play a key role in the pathophysiology of atherothrombotic disease and antiplatelet therapy with aspirin forms the therapeutic cornerstone for the reduction of vascular events in patients with established ischemic cerebrovascular disease. However, aspirin’s ability to suppress platelet function varies widely among individuals and lesser suppression of platelet function is associated with increased risk of vascular events. The causes of inadequate platelet response to aspirin remain uncertain but numerous mechanisms have been suggested, including a genetic basis. The objectives of this project are to evaluate the impact of candidate gene polymorphisms on platelet responsiveness to low dose aspirin therapy in patient with cerebral ischemia. Translation of genotype information into algorithms to predict aspirin response would minimize treatment failure or adverse drug effects in patients with stroke and ultimately, will improve clinical outcomes.

4. A study of neuroprotective aspects of Klotho biology. Investigators: Dr. Vijaya Majumdar, Dr. Rita Christopher (Funding by DBT)

As aimed for, the investigators could successfully demonstrate a significant neuroprotective potential of Klotho, the longevity factor against various neurotoxic stimuli. Delineation of the underlying pathways of Klotho neuroprotective signaling indicated the involvement of PI3K signaling components and downregulation of serine aspartyl proteases including capsins. Currently, the cross-talk of Klotho with IGF 1 signaling against the background of neuroprotective signaling is being evaluating. This study will shed light on mechanisms deployed by Klotho against “brain-aging”.

**Neurochemistry**

1. Establishment of low-cost, high-throughput, mass spectrometry-based screening test for X-linked adrenoleukodystrophy and other peroxisomal disorders using dried blood spots. Investigators: Dr. Rita Christopher, Dr. Netravathi, Dr. Maya Bhat (Funding by DBT)

Early diagnosis and treatment improves survival in patients with X-linked adrenoleukodystrophy (X-ALD), the most common peroxisomal disorder. Elevated C26:0 lysophosphatidylcholine (LPC) is a highly sensitive marker for identifying individuals with X-ALD and other peroxisomal disorders. The investigators propose to standardize a low-cost, robust and sensitive method for measuring C20:0, C22:0, C24:0 and C26:0 LPCs in dried blood spots using flow injection tandem mass spectrometry (FIA-MS/MS) method. Pre-analytical variables such as stability of LPCs in blood spots with time at different temperatures will be determined and reference ranges will be established for Indian population. This method will be compared with the previously validated LC-MS/MS method. Patients with neuroimaging features of leukodystrophy will be investigated with both methods and the sensitivity and specificity of FIA-MS/MS method to measure LPCs will be determined.

2. Vitamin D status and vascular cognitive impairment in the elderly. Investigators: Dr. Rita Christopher, Dr. Chandra SR (Funding by ICMR)
5. Pharmacogenetics of oral anticoagulation therapy in patients with cardiac valve replacement. Investigators: Dr. SR Kalpana, Jayadeva Institute of Cardiovascular Sciences & Research, Bengaluru, Dr. Rita Christopher, Dr. CN Manjunath, Jayadeva Institute of Cardiovascular Sciences & Research, Bengaluru (Funding by ICMR)

Patients with prosthetic mechanical valves require lifelong anticoagulation to prevent thromboembolic complications. Acenocoumarol, the commonly prescribed oral anticoagulant, has wide inter-individual variability. The study aims to investigate the association of polymorphisms of VKORC1 and CYP2C9 genes and acenocoumarol dose requirement. VKORC1 genotype distribution in patients for GG/CC, GA/CT and AA/TT were 57.6%, 36.6% and 5.8% respectively. The genotype distribution for CYP2C9 for variants 1*1, 1*3, 1*2, 2*2, and 2*3 were 78.5%, 14.1 %, 6.3 %, 0.5% and 0.5% respectively. The wild type of both VKORC1 and CYP2C9 genes required a higher acenocoumarol dose as compared to mutants. Patients (44.4%) having a combination of wild type of VKORC1 with wild type of CYP2C9 required a higher dose of acenocoumarol as compared to patients (30.2%) bearing heterozygous VKORC1 with wild type of CYP2C9. Bearing a mutant allele of VKORC1 and CYP2C9 genes increased the odds of requiring a low dose of acenocoumarol.

6. Influence of CYP2C9 and VKORC1 gene polymorphism in patients on oral anticoagulant therapy presenting with prosthetic valve thrombosis. Investigators: Dr. SR Kalpana, Jayadeva Institute of Cardiovascular Sciences & Research, Bengaluru, Dr. Rita Christopher, Dr. Nagaraja Moorthy, Jayadeva Institute of Cardiovascular Sciences & Research, Bengaluru, Dr. CN Manjunath, Jayadeva Institute of Cardiovascular Sciences & Research, Bengaluru (Funding by Rajiv Gandhi University of Health Sciences, Bengaluru)

Valvular heart disease is a major public health concern in India. Majority of the cases are due to Rheumatic Heart Disease and are treated with valve replacement surgery with mechanical prosthetic valves. This requires lifelong oral anticoagulation, to prevent thromboembolic complications. However, in spite of chronic anticoagulation post-surgery some patients present with thrombosis of the prosthetic valves. The aims and objectives of this study are to explore the contribution of CYP2C9 and VKORC1 gene polymorphism in patients on oral anticoagulant therapy presenting with prosthetic valve thrombosis.

7. Role of angiotensin-converting enzyme (ACE) gene polymorphism and ACE activity in predicting outcome after acute myocardial infarction. Investigators: Dr. Nagaraja Moorthy, Jayadeva Institute of Cardiovascular Sciences & Research, Bengaluru, Dr. SR Kalpana, Jayadeva Institute of Cardiovascular Sciences & Research, Bengaluru, Dr. Rita Christopher (Funding by Rajiv Gandhi University of Health Sciences, Bengaluru)

Myocardial Infarction (MI) is the most important cause of mortality and morbidity in developed countries. Angiotensin Converting Enzyme (ACE) plays a key role in cardiovascular structure and function. It is involved in the production of angiotensin-II and in the catabolism of bradykinin. The ACE gene polymorphism has been implicated in the development of MI, hypertension, and left ventricular hypertrophy. However, the impact of this polymorphism on clinical outcomes in patients suffering from acute MI is not known. The objectives of this study are to explore the association ACE gene polymorphism and outcomes after acute MI in south Indian population, and elucidate the association of ACE activity with mortality and morbidity after MI.

8. Tau-focused immunotherapeutic approaches to Alzheimer’s disease. Investigator: Dr. Sarada Subramanian (Funding by CSIR)

SDS-PAGE (10%) analysis of recombinant tau produced in E. coli.

Fluorescence intensity values obtained with binding of thioflavin S to aggregated tau (tau).
hippocampus. Effective treatment for AD is still not available. In this study, the sequence comprising of residues 50-71 in the N-terminal region of tau was selected as a potential immunotherapeutic peptide. Its therapeutic potential was tested in experimental tauopathy model rats. Passive immunization resulted in a significant improvement in learning and memory functions in Barne’s maze task, reduction in p-tau levels in the hippocampal homogenates and prevention of the aggregation of recombinant tau in vitro. These results demonstrate that targeting N-terminal region of tau harbouring the phospho-residue cluster 68-71 would offer an effective therapeutic opportunity for AD and other tauopathies.

9. Development of ELISA and evaluation of the potential of 14-3-3-3 protein as a biomarker of neuronal injury/ neurodegeneration with special reference to Creutzfeldt-Jakob disease. Investigators: Dr. Sarada Subramanian, Prof. P Satishchandra, Dr. Anita Mahadevan, Prof. SK Shankar (Funding by ICMR)

Definitive diagnosis of Creutzfeldt-Jakob disease (CJD) requires demonstration of infective prion protein (PrPSc) in brain tissues making ante-mortem diagnosis of CJD difficult. WHO recommends detection of 14-3-3 protein in CSF in cases of neuronal injury, with clinical correlation, as a useful diagnostic marker for CJD, obviating the need for brain biopsy. This facility is currently available in only a few specialized centers in the West and no commercial kit is available for diagnostic use in India. Hence, a sensitive dot-blot assay for quantitation of 14-3-3 protein was developed, and, evaluated its diagnostic potential to detect 14-3-3 proteins in CSF as biomarker in suspected cases of CJD. The analysis of CSF samples using this indigenously developed method indicated a significantly higher level of 14-3-3 in CJD samples, compared to the CSF from patients with other neurological disorders (p<0.001). This test is now made available for the first time in India from NIMHANS.

10. Generation of experimental models of muscular dystrophy: analysis of molecular mechanisms and myoprotection. Investigators: Dr. Srinivas Bharath MM, Dr. N Gayathri (Funding by ICMR)

Our study demonstrated that muscle pathology in the cardiotoxin (CTX) model of myodegeneration entailed loss of muscle strength and sarcolemmal integrity, altered muscle architecture, altered calcium dynamics, oxidative damage and mitochondrial dysfunction. There was widespread alteration in the expression of mitochondrial proteins, which mainly included subunits of the respiratory complexes. Mitochondrial damage in the CTX model was also associated with oxidative damage including increased protein oxidation of mitochondrial proteins. Data mining of the mass spectrometric data provided evidences of increased tryptophan oxidation among mitochondrial proteins. Curcumin treatment in CTX mouse model significantly prevented muscle damage, improved muscle strength, hastened muscle regeneration and reduced infiltration of inflammatory cells. Curcumin also hastened restoration of mitochondrial function and prevented oxidative stress in CTX-injected muscle. Due to its myoprotective properties and the ability to target multiple disease pathways, curcumin has a therapeutic potential in treating human muscle diseases.

11. Nanoassisted C60-pyrimidine derivatives: Their synthesis, characterization, neuroprotective and antiviral activities. Investigators: Dr. MM Srinivas Bharath, Dr. Devashish Sengupta, Assam University, Dr. Shaheed Jameel, ICGEB, New Delhi (Funding by DBT)

The main goal of this project was to synthesize and test pyrimidine-C60 based nano compounds in experimental models of Parkinson's disease (PD). The synthesis and chemical characterization of the compounds were carried out at Assam University of the north-eastern institute, while the neuroprotective analysis was carried out at NIMHANS. At the end of the project, 20 compounds were synthesized and tested in N27 dopaminergic neuronal cell line.

12. Analysis of neuroprotective properties of natural compounds and their derivatives/pro-drugs in experimental models of Parkinson's disease with potential therapeutic implications. Investigators: Dr. MM Srinivas Bharath, Dr. Muralidhar and Dr. PS Rajini from CFTRI, Mysore, Dr. Krishna Misra, CBMR, Lucknow (Funding by DBT)

This project aimed to analyze the neuroprotective effects of novel curcumin bio-conjugates in experimental models of Parkinson’s disease (PD). Among the curcumin derivatives synthesized and tested, curcumin monoglucoside (CMG) and methoxy-hydroxy benzidine derivative of L-DOPA (L-DOPA-MHB) displayed significant neuroprotection in N27 dopaminergic cells against rotenone toxicity. Interestingly, both CMG and L-DOPA-MHB displayed improved bioavailability in cells compared to curcumin alone with potential therapeutic applications.

13. Role of Glutamate excitotoxicity and cytokines in invasion of glioblastoma. Investigators: Dr. Nandakumar DN, Dr. Sampath S, Dr. Vani Santosh (Funding by DBT)

Despite new diagnostic techniques and combined modality therapy prognosis of glioblastoma remains dismal. Surgical therapy, radiotherapy and chemotherapy have failed to drastically change survival. They have exceptional ability to infiltrate normal brain, often along blood vessels or nerve fibres. This feature makes complete radical surgical resection virtually impossible and leading in almost all cases to tumor recurrence. Several factors are thought to contribute to the invasive and migratory properties of glioblastoma cells, interacting with the microenvironment and enhancing motility and invasion.
The investigators aimed at understanding glutamate excitotoxicity in GBM and the role of cytokines on invasiveness of tumor and by doing so, contribute to the understanding of the complex biological interactions that regulate glioblastoma migration, invasion and recurrence.

14. To explore the interaction between IL-1 receptor pathway, activated glutamate receptors and angiogenic signaling in glioblastoma. Investigators: Dr. Nandakumar DN, Dr. Rita Christopher, Dr. Sampath S, Dr. Vani Santosh (Funding by SERB, DST)

Glioblastoma is the most common primary malignant brain tumor with mean survival of 15 months after diagnosis. Angiogenesis is associated with progression and poor prognosis of gliomas. VEGF, a key factor of angiogenesis, is regulated by HIF-1. Its transcription is induced by IL-1, IL-8, IL-6 and PDGF-B. With bevacizumab treatment, only minimal improvements in overall survival are observed and patients invariably relapse. It alters the pattern of tumor recurrence, leading to infiltrative tumor spread. The present study intends to explore the potential interaction between glutamate receptor signaling, IL-1 receptor signaling and angiogenic signaling. This is aimed at discovery of newer role of glutamate and its receptors in angiogenic signaling pathway and glioma biology. Understanding the molecular mechanisms underlying activation of glutamate receptors, IL-1 and angiogenic signaling of glioma will provide valuable insights in glioma biology which will help in the design of new combinatorial therapies for patients with glioblastoma.

15. Genetic and biochemical profiling of patients with glutaric aciduria type I. Investigator: Dr. Kruthika Vinod TP (Funding by SERB, DST)

Glutaric acidemia type I, is an autosomal recessive disorder of amino acid metabolism and caused due to deficiency of the enzyme glutaryl-CoA dehydrogenase, a mitochondrial enzyme located in the degradative pathway of the amino acids lysine, hydroxylysine and tryptophan. The aim of this project is to correlate biochemical phenotype with its respective genotype and to know the prevalence of low excretes and its genotype in Indian population. The finding from this study, will improvise the diagnostic sensitivity and specificity of neonatal screening for GA-I and in addition it also helps in acquiring accurate figures on its prevalence in our population.

Students:

16. Circulating microRNAs: Role as molecular biomarkers in cerebral small vessel disease. Investigators: Dr. Prabhakar P. Guides: Dr. Rita Christopher, Dr. SR Chandra

Cerebral small vessel disease (SVD) is the most common cause of vascular dementia (VaD) and age-related cognitive decline. The diagnosis of cerebral SVD depends on clinical criteria and neuro-imaging findings. The aim of this study was to identify a panel of circulating miRNAs which may be helpful as molecular diagnostic markers for cerebral SVD. Plasma miRNAs profiling showed that 44 miRNAs were differentially expressed in small vessel VaD compared to age and gender-marched healthy controls. Validation study revealed that 4 miRNAs (miR-409-3p, miR-502-3p, miR-486-5p and miR-451a) could be used as valuable biomarkers for identifying the disease.

17. Expression profiling of microRNAs and elucidation of their possible role in the formation and rupture of intracranial aneurysms. Ms. Supriya M. Dr. Rita Christopher, Dr. Dhananjaya I Bhat, Dr. B Indira Devi (Funding by ICMR)

Rupture of an intracranial aneurysm (IA) is associated with a high rate of morbidity and mortality. Currently, there are no established molecular biomarkers for identifying a cerebral aneurysm or predicting its rupture. Similarly, the patho-mechanism of aneurysm formation has not been understood to any significant proportion. In the present study, the investigators propose to identify the differentially expressed miRNAs in the aneurysm tissue and the circulating blood of patients with ruptured aneurysm and identify the possible targets of the semi-RNAs for further elucidating their exact roles in the formation and rupture of IA.

18. Exploring the possible role of estradiol and estrogen receptors in the patho-mechanism of aneurysmal subarachnoid hemorrhage. Ms. Shruthi SR. Guides: Dr. Rita Christopher, Dr. B Indira Devi, Dr. Dhananjaya I Bhat (Funding by ICMR)

Vascular homeostasis is maintained by estrogen. Drop in estradiol level during menopause may cause perturbation of homeostasis in the cerebral blood vessel wall ultimately leading to intracranial aneurysm development and progression. Investigators hypothesize that genetic predisposition along with estradiol deficiency may trigger the inflammation cascade and this in turn may cause in the vessel wall degradation, focal weakening and out pouching of the vessel wall leading to aneurysm formation, thus making postmenopausal women more vulnerable to aneurysmal subarachnoid hemorrhage (aSAH). With this background, the investigators aim to evaluate the possible role of estradiol and estrogen receptors in the pathomechanism of aSAH.

19. Mass spectrometry-based targeted metabolomics for the diagnosis of X-linked Adrenoleukodystrophy. Ms. Archana Natarajan. Guides: Dr. Rita Christopher, Dr. Nethravathi M, Dr. Maya Bhat

X-linked adrenoleukodystrophy (X-ALD), a peroxisomal disorder is characterized by impaired peroxisomal -oxidation of very long chain fatty acids (VLCFA). The accumulation of VLCFAs in the blood is the diagnostic marker for X-ALD. Estimation of VLCFA by gas
chromatography-mass spectrometry is expensive, cumbersome and time consuming. Elevation of C26:0 VLCFA results in the accumulation of C26:0 lysophosphatidylcholine (LPC). The aim of this study is to develop a robust, high-throughput mass spectrometry-based sensitive method for measuring a panel of LPCs in dried blood spots and to validate suitable metabolic markers for the identification of patients with X-ALD.


Neonatal monosodium glutamate administration to Sprague-Dawley rats led to imbalance in ghrelin and leptin levels resulting in adult-onset insulin-resistance and obesity. Aqueous cinnamon extract restored the ghrelin-leptin balance in these non-transgenic animal models. Fractionated cinnamaldehyde treatment improved insulin sensitivity, increased pGSK3β, inhibited cholinesterase activity and improved the learning ability in experimental rats. Histological evaluation revealed an increase in neuron count in the DG subfield of hippocampus upon treatment with CE. These beneficial effects of CE are suggestive of considering cinnamon as a dietary supplement in modulating the metabolic changes and cognitive functions in neurodegenerative disorders such as AD.

The work involved standardization of series of immunoassays wherein the specificity of polyclonal antibodies raised against individual 14-3-3 isoform specific peptides (beta, epsilon, gamma, zeta and sigma) in selective recognition of the cognate peptides of 14-3-3 protein was ascertained by ELISA. It is evident from the results that, all the pAbs recognized their cognate antigens to a significant extent. In terms of cross reactivity with non-cognate peptides, both gamma-specific and sigma-specific antibodies exhibited selective binding to the respective isoforms whereas the other 3 sets of antibodies recognized the heterologous peptides, albeit to a lesser extent.

21. Recombinant expression and characterization of core sequence of the various isotypes of human 14-3-3 protein and development of isoform specific immunoassays. Mrs. Udaya Kumari HB. Guide: Dr. Sarada Subramanian,

The procedure involved standardization of series of immunoassays wherein the specificity of polyclonal antibodies raised against individual 14-3-3 isoform specific peptides (beta, epsilon, gamma, zeta and sigma) in selective recognition of the cognate peptides of 14-3-3 protein was ascertained by ELISA. It is evident from the results that, all the pAbs recognized their cognate antigens to a significant extent. In terms of cross reactivity with non-cognate peptides, both gamma-specific and sigma-specific antibodies exhibited selective binding to the respective isoforms whereas the other 3 sets of antibodies recognized the heterologous peptides, albeit to a lesser extent.

22. Immunotherapeutic potential of N-terminal fragments of Tau (NTF-Tau) in tauopathy model rats. Mr. Ganesh Savanur. Guides: Dr. Sarada Subramanian

Presence of neurofibrillary tangles containing hyperphosphorylated tau is characteristic of the Alzheimer’s disease neuropathology. As cognitive functions correlate well with the degree of tau pathology, clearing these aggregates is a promising therapeutic approach. The aim of the proposed study is to evaluate the influence of active immunization with pathology specific phospho-tau epitopes on prevention of tauopathy in healthy animals and passive immunoneutralization studies on restoration of neuronal function in the animal models of tauopathy. The results indicated that antibodies directed against N-terminal region of Tau can significantly improve the cognitive functions in tauopathy model rats.

23. Evaluation of the mechanisms associated with neurotoxicity in cell and animal models and neuroprotection by natural products: Implications for Parkinson’s disease. Dr. Raghunath N. Guide: Dr. MM Srinivas Bharath (Funding by CSIR-SRF)

The project aims to understand the neurotoxicological mechanisms elicited by manganese (Mn) and MPTP in experimental models of manganism and Parkinson’s disease (PD). Acute exposure to Mn in vitro in dopaminergic neurons caused neuronal death, oxidative damage and mitochondria dysfunction. Genome-wide cDNA microarray demonstrated significant differences in the expression profile elicited by Mn compared to MPP+. Analysis of histone acetylation dynamics in N27 dopaminergic cells exposed to Mn and MPP+ showed distinct changes in acetylation on histones H3 and H4. On a therapeutic note, extracts from Bacopa monnieri offered neuroprotection against both models with therapeutic implications.

24. Glutathione depletion induced behavioural and epigenetic changes in an animal model of oxidative stress: Implications for psychiatric disorders. Ms. Vidya K. Guides: Dr. MM Srinivas Bharath, Dr. BS Shankaranarayana Rao (Funding by CSIR-SRF)
25. Comparative analysis of cellular changes in Duchenne muscular dystrophy (DMD), sarcoglycanopathies and other muscle diseases: Focus on mitochondrial function. Ms. Debashree Bandopadhyay. Guides: Dr. MM Srinivas Bharath, Dr. N Gayathri, Dr. A Nalini (Funding by ICMR-SRF)

Muscular dystrophies (MDs) are genetically diverse diseases but share common phenotypic features including muscle weakness, degeneration and progressive decline in muscle function. These diseases arise due to muscle protein defects which in turn might trigger downstream degenerative pathways and these events have been investigated in animal models of MDs. Molecular mechanisms underlying MDs are multifactorial and contribute to decline in physical activity, increase in proinflammatory cytokines that result in chronic inflammation and muscle catabolism. Studies on mitochondrial dysfunction and oxidative stress in muscle damage and degeneration are very limited. The current project aims to characterize human MDs and other related muscle pathologies with a focus on mitochondrial function using biochemical, histological and proteomic methods.

Mitochondrial efficiency was measured by complex I, II, III & IV activity. It was observed that all the complexes were significantly reduced in DMD when compared to control. Biochemical and histopathological analysis of muscle biopsy from subjects with lipid storage disorder, centronuclear myopathy, DMD and sarcoglycanopathy demonstrated loss of respiratory complex activities, loss of enzyme histochemical staining, ultrastructural alterations in mitochondrial architecture and increased ADP/ATP ratio. Analysis of mitochondrial proteome demonstrated significant alterations in the protein profile with varied changes in different muscle disease studied.

26. Analysis of the transcriptomic and epigenetic changes in 3-nitropropionic acid (3-NPA) neurotoxic model: focus on mitochondrial function. Ms. Ranganayaki S. Guides: Dr. MM Srinivas Bharath, Dr. B Padmanabhan (Funding by UGC-JRF)

This project includes morphological and molecular analysis of neuronal cells exposed to 3-NPA. 3-NPA induced neuronal death associated with oxidative stress and mitochondrial dysfunction. Genome-wide transcriptomics of the model revealed 2651 over-expressed genes and 1028 down-regulated genes, including enrichment of genes associated with mitochondrial function, synaptic activity and autophagy. Network analysis of shortlisted genes revealed that Nos2 and Bcl2 formed the core of the mitochondrial network; Faslg, FosI, Sqstm1 and Rictor in the autophagy network and Adora2a, Grm4, Rab3a, Bdnf and Stxbp1 in the synaptic network. Genome-wide DNA methylation analysis also highlighted the epigenetic regulation in 3-NPA neurotoxicity.

27. Role of IL1beta, IL6 and glutamate receptors in invasion of glioblastoma. Ms. Hurmath Fathima K. Guides: Dr. Nandakumar DN, Dr. Sampath S (Funding by UGC-JRF)

Glioblastoma multiforme (GBM) is one of the most common primary brain tumors with poor prognosis and highly invasive behavior. Glutamate has been implicated as an important player in the growth and invasion of gliomas. IL-1 has been implicated in glioblastoma invasiveness. Evidence has emerged on the interplay between IL-1 and excitotoxicity in case of ischemic brain damage. In gliomas, the level of IL-6 gene expression increases with the grade of malignancy. The study aims to look at the effect of the interleukins IL-1 and IL-6 on glioma cells, as well as their interplay with glutamate receptors to mediate their action.

28. Role of glutamate excitotoxicity, TNF-alpha and IL-13 in the invasion of high grade glioma. Mr. Palaniswamy R. Guides: Dr. Nandakumar DN, Dr. Dwarakanath (Funding by CSIR-JRF)

High grade gliomas are lethal as it infiltrates surrounding brain tissue. Glutamate uptake is reduced and excitotoxic concentrations of glutamate are released leads to glioma growth. Eighty percent of the high-grade gliomas are positive for TNF- and the decoy receptor for IL-13, IL-13R 2 protein is expressed at high levels only in high-grade glioma cells. No study is available on the role of invasion mediated by glutamate excitotoxicity, TNF- and IL-13. The project aims to study...
direct role of these on invasion and cross talk between these molecules and its signaling pathway.

29. **Role of metabotropic glutamate receptor signaling in angiogenesis of glioblastoma.** Mr. Gejo Gangadharan. Guides: Dr. Nandakumar DN, Dr. Vikas Vazhayil (Funding by UGC-JRF)

Glioblastoma multiforme (GBM) is the most malignant grade IV primary brain tumor with predominant astrocytic differentiation. GBM cells secrete several factors and create tumor-promoting microenvironment which encourages tumor growth, angiogenesis, and progression. The presence of high extracellular concentrations of glutamate, along with increased expression of proangiogenic factors including VEGF, HIF, and IL-8 suggests that gliomas co-opt neurotransmitters along with angiogenic factors and their receptor-mediated signaling to support their unusual growth and progression. The investigators aim at better understanding of the role of metabotropic glutamate receptors in angiogenic signaling, which could provide significant contributions to the management of GBM.

**Extra pulmonary tuberculosis, especially tubercular meningitis is one of the chronic infections of central nervous system. Thorough study of *Mycobacterium tuberculosis* is needed to confirm the different types of strains causing infections in general population. As conventional as well as automated methods used to identify this bacterium are not specific enough to give strain level identification, deep whole genome sequencing is required to identify these bacteria and also to study the drug resistance pattern of the same.**

6. **Genomic and proteomic analysis of chronic meningitis.** Investigators: Dr. R Ravikumar, Dr. Keshava Prasad

Chronic meningitis is usually caused by the pathogens like *Mycobacterium tuberculosis*, in case of TB meningitis or *Cryptococcal neoformans*, in case of cryptococcal meningitis. Both these conditions call for clinical emergency and must be treated as early as possible. Early diagnosis and treatment in such cases had been helpful in decreasing the mortality rate.

7. **Development of novel antimicrobial agents to overcome microbial resistance.** Investigators: Dr. R Ravikumar, Dr. Jayanth Haldar

Microbial pathogens are widely becoming resistant to the existing drugs and this has turned out to be a major global health problem. The aim of the study is to understand the mechanism of their resistance and try developing novel strategy to increase the efficacy of the existing drug and developing new drugs, to tackle the infectious diseases caused by these pathogens. The investigators are working towards the chemical modification of antibiotics such as penicillin, vancomycin, aminoglycosides to overcome the inherent resistance of the parent drugs and achieve enhanced efficacy against drug resistant bacteria. The group is also actively involved in developing synthetic peptidomimetics as therapeutics and addressing the issues (such as toxicity, location specific delivery, in-vivo activity, and most importantly the cost of production) associated with natural antimicrobial peptides. Different classes of antimicrobial agents synthesized in the lab showed impressive antibacterial activity against different bacteria (both Gram positive and Gram-negative) including the drug resistant species like MRSA and VRE etc. The investigators will test their antibacterial efficacy against clinical isolates of different bacteria. The antimicrobial agents synthesized in the lab is being analyzed for their in-vitro antibacterial activity and the ones with impressive results will be tested in-vivo in mice model with a hope of taking the drug to market.

8. **Prospective study of TB meningitis to search biomarkers for early diagnosis in CSF/Blood using mass spectrometry based quantitative proteomics.** Investigators: Dr. R Ravikumar, Dr. Shripad A Patil, Dr. Suman Thakur
Meningitis represents one of the common infectious based issues under Central Nervous system diseases. Tuberculous and cryptococcal meningitis form the predominant etiological basis of chronic meningitis. Patient treated in early stages of the infectious are 5 times more likely to recover. Rapid identification and diagnosis is thus helpful. Biomarker search can be targeted using differential quantitative proteomics approach. The molecules found to be differentially expressed can be independently validated and developed as a biomarker which can aid in faster diagnosis.

9. Susceptibility of staphylococcal isolates to P128 a new class of antimicrobial-A protein. Investigators: Dr. M Jayasheela, Gangagen Biotech Pvt. Ltd., Dr. R Ravikumar

CONS identification is done in the laboratory using preliminary routine diagnostic tests. For routine clinical purpose the strains are not further identified. For the study, further characterization and speciation is done to evaluate the efficacy of P128 compound. Speciation is done using extended biochemical tests. Species identified is then tested for its susceptibility to P128 compound.

10. Omics analysis for diagnosis of microbial infections and antimicrobial resistance. Investigators: Dr. Akhilesh Pandey, Dr. R Ravikumar (Funding by Wellcome Trust-DBT India Alliance)

Infectious diseases are one of the top causes of debility and death in India. Several infectious diseases have been increasingly identified and are expected to rise including those caused by uncharacterized pathogens and those re-emerging as a result of anti-microbial resistance. Objective of the study is to identify pathogen of clinical interest by global discovery and targeted sequencing and validation.

11. Extraction and analysis of lipids from the Mycobacterium tuberculosis. Investigator: Dr. Shripad A Patil (Funding by CSIR)

The mycobacterial cell wall is rich in lipid-conjugates and about 30% of the mycobacterial genome encodes for its cell wall components. Recent advances have highlighted the importance of lipids as immune modulators. Papa et al. demonstrated the specificity of some of lipids by reacting to immune sera raised in rabbits with the corresponding antigen and with crude extracts of MTB complex which was non-reactive with 39 other mycobacterial species. However, immune response to mycobacterial lipids is poorly explored as a diagnostic antigen in TBM diagnosis. Hence, the present study is aimed at the extraction of non-polar lipids (NPL) and polar lipids (PL) from MTB H37Ra and evaluating the extracted antigens for efficiency for immunodiagnosis of tuberculous meningitis (TBM).

Extraction of mycobacterial lipids and their subsequent analysis by 2D TLC has been previously described for MTB (1), but no adequate data exists on total lipid profiling of MTB H37Ra. Here the investigators present the first biphasic extraction and complete analysis of the lipids of MTB H37Ra. Analysis of the petroleum ether extract (containing the non-polar fraction) with the least polar solvent system (Figure 1A) enabled, the identification of Tri acyl glycerol (TAG) and menaquinone (MQ). System B (Figure 1B) resolved monomycolyl glycerol (MMG) and phenolic glycolipid (PGL). The use of solvent system C (Figure 1C) allowed further confirmation of MMG and PGL whilst the most polar constituents of the petroleum ether extract, the cord factors TDM and TMM and glucose monomycolate (GMM) were seen using system D (Figure 1D). Analysis of the chloroform : methanol extract (which contains the polar lipid fraction) with system D (Figure 1E) resolved TDM and TMM. More individual lipids were seen using the most polar system (Figure 1F) which mainly resolved a variety of PIMs and other phospholipids.

12. Rapid AChR antibodies ELISA. Investigator: Dr. Shripad A Patil (Funding by CSIR)
considered as a positive result. A trace reaction or the non-appearance of any dot was considered a negative.

MuSK Protein cloning and expression: Full-length MuSK was cloned from human muscle cDNA with the following primers: forward 5’-gac ctc gac atg aqa gac ctc gtc aac att cca ctg-3’ and reverse 3’-ctc tcc cgt ctc cct tga cac tca cag acc atg gag c-5’. These primers introduced an N-terminal XhoI and a C-terminal KpnI site that allowed subcloning into the pEGFP-N2 vector. Deletion of the stop codon enabled expression of a GFP-fusion protein. HEK293 cells (American Type Culture Collection) were transiently transfected with 0.5 μg/mL DNA and turbofect transfection reagent (Thermo Scientific) and analyzed 48 h after transfection.

The nitrocellulose membrane (Sigma, USA) was submerged in distilled water for 5-10 min. Purified AChR concentrated was blotted (0.6μg/dot) onto membrane as a dot by using the capillary tube and then the membrane was kept for air drying. A mixture of serum and 1% milk-PBS-T in a ratio of 1:20 v/v dilution (25 μl in 500 μl) was added onto each membrane placed in a plastic tray with controls. The dot blot membrane was incubated for 90 minutes on a shaker at room temperature (RT). The sample was decanted and the membrane was washed 3 times with tris-glycine buffer (TBS). HRP conjugated rabbit anti-human polyclonal IgG (Dako, Denmark) diluted (1:500) in PBS-T, 200μl/ sample was then added. The membrane was kept for incubation at RT for 60 minutes and washed 3 times with TBS. The membrane was developed in dark by chromogenic substrate solution (0.07% 4 Chloro-1-Naphthol; Sigma USA, in TBS with 0.05% hydrogen peroxide). The reaction was stopped by washing the membrane with distilled water and kept for drying on a filter paper. A visibly defined violet dot at the place where the AChR was blotted was

LRP4 protein cloning and expression: Full-length complementary DNA (cDNA) coding for human LRP4 (huLRP4) was obtained from Imagenes GmbH (Berlin, Germany) and subcloned into the pMES vector, which allows identification of transfected cells by simultaneous expression of enhanced green fluorescent protein (EGFP). Successful cloning and surface expression of LRP4 was confirmed by Western blotting.

13. Methicillin resistance in Staphylococcus aureus (MRSA / HICC). Dr. HB Veenakumari, Ms. Priya Vijayan (Funding by UGC)

A notorious pathogen known to cause serious hospital and community acquired infections is more prominent in NIMHANS hospital setting, mainly causing surgical site and device related infections. Detection of methicillin resistance is of most importance as these pathogens are resistant to most of the commonly available antibodies and B Lactams. As part of the routine molecular diagnosis, the investigators employ PCR method to detect the resistant gene mecA responsible for methicillin resistance thus providing early and precise detection of MRSA which is needed for proper treatment. The investigators also use genotyping methods like SCC mec PCR, Spa typing PCR, toxin profiling to understand the molecular epidemiology of MRSA which is essential to understand the spread and relatedness of the pathogen and to take necessary control measures for infection prevention.
As VRE are increasing in the hospital setting and as they are responsible for spreading vancomycin resistance to other pathogens like MRSA. There is an essential need to detect vancomycin resistance in these isolates. The investigators employ PCR for detecting van genes and are routinely used in screen VRE and probable MRSA.

**Students:**

14. **The comparative evaluation of anti-nAChR, anti-MuSK and anti-LRP4 antibodies and the possible cellular mechanisms involved in the immunoregulation of human Myasthenia gravis.** Mr. Suresh Chand Bokoliya. Guides: Dr. Shripad A Patil, Dr. Taly AB

15. **Study of immune abnormalities in Schizophrenia.** Mr. Varun CN. Guides: Dr. R Ravikumar, Dr. Shivarama V, Dr. Manjunatha MV

Schizophrenia is a mental disorder affecting roughly 1 million populations globally. The biological basis of the disease is not well characterized. Current theories implicate there is a role of immune system in the progression of the disease, though this has not been well characterized. The current study aims to study the immune abnormalities based on cytokine and immune assays to identify the inflammatory changes. Results obtained so far indicate inflammation is probably not a universal feature.

16. **Molecular characterization of multi-drug resistant pathogenic gram negative bacteria.** Ms. Archana Agrawal. Guides: Dr. R Ravikumar, Dr. Keshava Prasad

Gram negative bacteria represent one of the most common etiological agents of bacterial infections. Gram negative bacteria including members of enterobacteriaceae family, *Pseudomonas, Acinetobacter* etc. are the emerging organisms showing resistance to most of the antibiotics commonly used these days. Number of multidrug resistant gram negative bacteria is increasing dramatically displaying resistance to most of the antibiotics commonly used these days. The drug susceptibility test currently takes 3-6 weeks to yield results. More rapid tests using liquid media, require specific equipment and consumables, and are still expensive. Rapid diagnosis of MDR patients is nevertheless necessary to avoid the spread of MDR strains.

Colorimetric methods for detecting drug resistance in *M. tuberculosis* are based on the reduction of an oxidation-reduction indicator. Resistance is detected by a change in colour of the oxidation-reduction indicator, which is directly proportional to the number of viable mycobacteria in the medium. Colorimetric tests such as the MTT [3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide] method, the Alamar Blue method, the resazurin microtitre assay (REMA) and the nitrate reductase assay have been developed. These tests are less time-consuming than conventional methods and have proven to be rapid and reliable, with good sensitivity and specificity for the detection of INH and RMP resistance. REMA has also been described as being useful for the diagnosis of resistance to second-line drugs. In this study, Resazurin microtiter assay is used for determining the minimum inhibitory concentration (MIC) of the resistant isolates. The minimal inhibitory concentration (MIC) of each drug is the lowest concentration of the antibiotic that prevents a change in colour of the resazurin. MIC values are scored for each isolate for comparison with the results obtained with the MGIT method. During the period determination of MIC values of resistant isolates by resazurin assay in microtitre plates and the procedure for processing of Mycobacterial cultures for TEM have been standardized, and from positive CSF culture samples drug resistant Mycobacterium tuberculosis were screened under TEM.

**Neurophysiology**

1. **Meditation, sleep organization and well-being from an Indian perspective: Evaluation of micro sleep architecture dynamics, sleep consciousness and psychological well-being in practitioners of vipassana meditation.** Investigators: Dr. Bindu M Kutty, Prof. Sangeetha Menon (NIAS), Dr. Ravindra PN, Mr. Chetan Mukundan, Dr. Prasanth Gupta (IISc) (Funding by DST-SATYAM)

Whole night polysomnography recordings of healthy controls (n =16) were carried out using Nihon Kohden EEG 1200 system. Manual sleep stage scoring was done as per AASM guidelines. The sleep data and scoring details were imported into Matlab version R2013a, using EEGLAB toolbox version 13.4.4b. Custom Matlab scripts were used for analysis of macro-sleep variables for the whole night as well as for each cycle. Additionally, micro-sleep architecture details were computed using Neuroloop gain feature of Polymann to predict stage-wise probability of spindle and delta occurrence. Statistical analysis was carried out only for evaluating changes across sleep cycles for healthy control subjects. In addition, standardization of tACS (transcranial alternating current stimulation) and ERP studies have been completed.

Adapting the ANGEL paradigm (Nair et al., 2016) for studying cognitive control of emotion regulation using the standardized Nencki
Affective Picture System (NAPS; Marchewka et al., 2014) for use in the study is ongoing.

2. Translational research in Amyotrophic Lateral Sclerosis (ALS) - Development of biomarkers for diagnosis, monitoring disease progression and evaluation of toxicity. Investigators: Dr. TR Raju, Dr. A Nalini, Dr. TN Sathyaprabha, Dr. Phalguni Anand Alladi, Dr. MM Srinivas Bharath (Funding by ICMR)

Earlier study showed that Chitotriosidase (CHIT-1) was up-regulated in the cerebrospinal fluid of Amyotrophic Lateral Sclerosis patients (ALS-CSF) by 19 folds and it can potentially serve as a biomarker, which can aid in the diagnosis of ALS. In the present study, investigators found that CHIT-1 expression was increased by microglial cells when primary cultures from neonatal rat spinal cords were exposed to ALS-CSF. Investigators also examined if the levels of CHIT-1 in the serum of ALS patients. The serum CHIT-1 levels was found to be up-regulated by more than three fold in ALS patients (n = 12) compared to normal controls (n = 11).

3. Exploring the autonomic and neuroendocrine regulation of the mirror neuron system in Schizophrenia. Investigators: Dr. TN Sathyaprabha, Dr. Jagadisha Thirthalli, Dr. Urvakhsh M Mehta (Funding by SERB)

4. Evaluation of antiepileptic activity of medicinal plants in animal models of epilepsy. Investigators: Dr. BS Shankaranarayana Rao, Dr. Sadhana S, ICT, Mumbai (Funding by DST)

The current therapeutic treatment of epilepsy with modern antiepileptic drugs (AEDs) is associated with several side-effects. Drugs also have low therapeutic window so it need continuous therapeutic drug monitoring and approximately 30% of the patients continue to have seizures with current AEDs therapy. Further, a large number of drug interactions seen with almost all current antiepileptic drugs make it more difficult to attain easy control on seizures. Traditional systems of medicine have been exploring number of medicinal plants as an effective treatment of epilepsy over the past centuries but so far have not got the place among the standard anticonvulsant medication because their efficacy has not been established. Thus, research for finding new drugs with less adverse effects and more efficacy, seems to be essential. Accordingly, this study focuses on the evaluation of
antiepileptic potential of medicinal plants to find out the mechanism of action for its antiepileptic activity along with possible active constituents responsible for the same. Extractions of plants Eclipta alba and Pistacia integerrima was used for evaluation of antiepileptic activity and also in combination with standard antiepileptic therapy. Further evaluation of effect of particular fraction of the extract for effects of synaptic plasticity in the hippocampus is being studied. It has been observed that temporal lobe epilepsy is associated with decreased hippocampal synaptic plasticity and the same was partially restored by chronic treatment of Eclipta alba and Pistacia integerrima. The effect of active components of both these plant extracts significantly reduced the generation of spontaneous recurrent seizures.

5. A multimodal approach to evaluate the efficacy of enriched environment in ameliorating early maternal separation induced changes in brain function: A morphological, biochemical and behavioural study in rats. Investigators: Dr. Laxmi T Rao, Dr. Bindhu OS (Funding by ICMR)

Early-life stress such as maternal separation and isolation stress (MS) results in higher sensitivity to stressors later in adult life. This is reflected as higher tendency to develop stress-related disorders in humans and animal models, including anxiety and depression. Environmental enrichment (EE) reverses some of the damaging effects of maternal separation in rats when provided during adulthood life. In this project, a rat model was used to demonstrate that a single short episode of EE in adulthood reduced anxiety-like behavior in maternally separated rats.

![Fig. a. represents Marble Burying Test. MS rats showed more anxiety whereas Environmental Enrichment (EE) significantly reduced anxiety level. Figs. b&c represents Open Field Test:- Rats exposed to EE spent more time in center and more number of entries in center suggesting reduced anxiety. Data represents ±SEM from n=11 experiments. (Kruskal-Wallis test, ***p<0.001, *p<0.05).](image)

6. Modeling sporadic amyotrophic lateral sclerosis using patient derived induced pluripotent stem cells. Investigators: Dr. K Vijayalakshmi, Dr. Phalguni Anand Alladi, Dr. TN Sathyaprabha, Dr. TR Raju, Dr. A Nalini (Funding by SERB, DST)

Although studies on animal models of ALS have shed light on several pathomechanisms, there is a striking failure to translate experimental observations into therapies. Hence, there is need to develop in-vitro model of human origin. Induced pluripotent stem cell (iPSC) technology provides a versatile “disease in a dish” human model when derived from ALS patients. In this project, we propose to derive iPSC’s from sporadic ALS patients and investigate the pathomechanisms associated with SALS. The project will lead to development of a human in-vitro model of SALS which will aid in better understanding of the disease pathology and also in future will be crucial for drug screening and designing better therapeutic interventions.

7. A study on the role of Chitotriosidase-1 in the pathophysiology of sporadic amyotrophic lateral sclerosis. Investigators: Dr. K Vijayalakshmi, Dr. Phalguni Anand Alladi, Dr. TN Sathyaprabha, Dr. TR Raju, Dr. A Nalini (Funding by DBT under the “BIOCARE” Scheme for Women Scientists)

Profoundly up-regulated levels of the biologically active enzyme, Chitotriosidase-1 (CHIT-1) in ALS-CSF acquaints it a biomarker status for early diagnosis of the disease. In addition, our earlier study reveals its expression exclusively by microglia in the CNS. Furthermore, recombinant CHIT-1 exerted its direct effect on microglia in cultures by inducing proliferation and activation. Yet its mechanism of action is unknown. This study aims at investigating the molecular pathways that are activated by CHIT-1 and elucidating the roles played by CHIT-1 in immunomodulation. In addition, the study aims at identifying the probable factors present in ALS-CSF which may trigger the synthesis of CHIT-1.

8. Neurosteroids and cognitive dysfunction: Behavioral, electrophysiological and pharmacological evaluation. Investigators: Dr. BN Srikumar, Dr. BS Shankaranarayana Rao (Funding by SERB, DST)

Neurosteroids are synthesized in both neurons and astrocytes and regulate several functions in the brain including cognition. The enzyme complex of 5 -reductase (5 -R) and 3 -hydroxysteroid dehydrogenase (3 - HSD) catalyzes the formation of tetrahydroprogesterone (THP). THP and other neurosteroids are involved in several physiological functions and their alterations have been reported in many neuropsychiatric illnesses. Patients who receive finasteride (5 -R inhibitor) treatment for benign prostatic hyperplasia or androgenetic alopecia develop cognitive dysfunction. However, the mechanisms underlying the effects of finasteride administration are not well understood. It is imperative that an animal model that mimics the clinical scenario be developed to facilitate mechanistic studies. Accordingly, in the current study, we are evaluating the effect of chronic finasteride administration in rats on learning and memory in the radial arm maze and water maze following chronic finasteride treatment. Currently, the paradigms are being optimized to evaluate the effect of finasteride. The neurosteroid levels and the 5β-R activity in discrete regions of the brain are being assessed following finasteride administration. The ongoing study will provide insights into the involvement of neurosteroids in cognitive dysfunction and will lead to the development of novel therapeutics targeting the neurosteroid system.
9. A behavioral, pharmacological and electrophysiological evaluation following 5-alpha reductase inhibition by finasteride. Investigators: Dr. BN Srikumar (NIMHANS Intramural Funding/Grant)

The enzyme 5 -Reductase (5-R) catalyzes the formation of dihydroxytestosterone, which is involved in male pattern hair loss and benign prostatic hyperplasia. Finasteride inhibits 5 -R and is used to treat both these conditions. Patients who receive finasteride treatment show signs and symptoms of depression and anxiety after treatment, which persist even after the treatment is discontinued. The cellular and molecular basis underlying this phenomenon is less understood. To evaluate this, depression-like behavior was assessed following chronic finasteride treatment. Further, the effect of antidepressant treatment on the depression was evaluated. Adult male rats were subjected to either vehicle or finasteride administration, followed by evaluation of depression-like behavior in the forced swim test (FST). Finasteride administration significantly increased immobility in the FST. In control rats, fluoxetine decreased the immobility, while rats subjected to finasteride administration did not respond to fluoxetine treatment. Evaluation of depression and anxiety in additional paradigms along with other antidepressant drugs is ongoing. Further, to understand the cellular mechanisms, synaptic plasticity and neurotransmitters content will be evaluated. This study will unravel the cellular mechanisms underlying depression and anxiety associated with chronic 5 -R inhibition and will lead to the development of novel drugs to treat depression and anxiety.

PD in human populations has a racial/ethnic bias, similarly different mice strains also show varying responses to MPTP; C57BL/6 mice is the most sensitive while CD-1 white mice is less sensitive. The investigators propose to study the basal numbers of glia in addition to a battery of astroglial and microglial proteins in determining such differential susceptibility to MPTP using techniques of immunohistochemistry, ELISA and Western blotting. Electron Microscopic evaluations are being conducted to understand the differences in responses of neurons and glia to the MPTP-induced neurotoxicity.

Even though the cell organelles of glial cells such as mitochondria, endoplasmic reticulum, Golgi Apparatus were less affected compared to that of neurons, there was morphological transformation of glial cells in to reactive phenotype after giving MPTP.

10. The role of glia in aging and in determining neurotoxicity of 1-methyl- 4-phenyl-1,2,3,6-tetrahydropyridine (MPTP). Investigators: Dr. Phalguni Anand Alladi, Dr. Bindu M Kutty, Dr. TR Raju, Ms. Upasna Bharati, SRF (Funding by DBT)

The best recapitulation of Parkinson's disease (PD) pathology in an animal model is by injecting 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP) neurotoxin. It causes selective degeneration of dopaminergic neurons in substantia nigra pars compacta (SNpc). The prevalence of Parkinson's disease (PD) variants like Vascular parkinsonism, fronto-temporal dementia with Parkinsonism, normal pressure hydrocephalus, Parkinson's disease with dementia, and Dementia with Lewy Bodies are distinct entities presenting with Parkinsonian features and cognitive impairment, but lack specific diagnostic criteria. Identification of biomarker/s in these variants is not only nationally but globally relevant, as it/they can assure early identification of patients, diagnostic accuracy and elucidate disease pathogenesis. Earlier studies on body fluids of PD patients like blood, plasma, CSF etc. have proposed molecules like β-synuclein, DJ-1, CSF amyloid-beta, urate etc. as biomarkers for PD, albeit without any consensus.

The LC-MS/MS mass-spectrometric method will be adopted to identify differentially expressed biomarkers in the patient-CSF, following neuroradiological and cognitive assessment. The identified biomarkers will be validated using ELISA and correlated with disease specificity/progression. The 1-Methyl 4-Phenyl 1,2,3,6-tetrahydropyridine induced mice model of PD will be used as gold standard to evaluate the biomarkers' pathogenetic potential.

11. Identification and validation of biomarkers for Parkinsonian syndromes with cognitive impairment. Investigators: Dr. Phalguni Anand Alladi, Dr. Pramod Kumar Pal, Dr. Shantala Hegde, Dr. Jitender Saini, Dr. Ravi Yadav, Dr. Vijayalakshmi K (Funding by ICMR)
12. Effect of celestrus paniculatus on cognitive deficits in chronically stressed rats: A behavioral, neurochemical, structural and electrophysiological approach. Investigators: Dr. Bhagya V, Dr. BS Shankaranarayana Rao (Funding by DST)

Chronic stress is known to precipitate several affective disorders including depression, post traumatic disorder and anxiety. Prolonged stress can result in long-term deleterious effects, including hippocampal cell atrophy and death, which in turn result in memory impairments. Herbal drugs are known to possess beneficial effects on the neuronal plasticity and are emerging as promising treatment strategy for psychiatric disorders. Accordingly, the aim of the present study was to evaluate the effect of *Celastrus paniculatus* oil treatment on stress-induced anxiety-like behavior, spatial learning and memory impairment, changes in acetylcholinesterase (AChE) activity, synaptic plasticity and dendritic arborisation in the hippocampus. Male Wistar rats were subjected to restraint stress for 21 days (6h/day). Stressed rats were treated with *Celastrus paniculatus* for 14 days. We observed that chronic restraint stress induced significant dendritic atrophy of the apical dendrites. Interestingly, CP oil treatment restored dendritic atrophy in stressed animals (Figure 1 and 2). These results further reinforce the notion that the progressive neuroplastic effect of CP in neurodegenerative disorders including chronic stress.

13. Evaluation of efficacy of nutritional preparations and specific nutritive ingredients in the management of cognition in suitable animal models. Investigators: Dr. Sabitha K Rajesh, Dr. Laxmi T. Rao, Dr. TR Raju (Funding by ITC, Bengaluru)

The present study aimed to establish biological basis for cognitive enhancement with nutritional components. For this young adult rats (2 months old) were used. Rats were first subjected to anxiety test using light-dark task followed by differential fear conditioning and fear memory retention was tested after 24 hours of conditioning. The time spent in freezing was measured as fear. The % fear was compared between controls and rats fed with Nutrimalt. Spatial learning and memory was evaluated using 4-arm baited radial arm maze test and retention of spatial memory was tested after rats attained 80% of correct choices. The results demonstrate that rats fed with Nutrimalt were effective in reducing the number of reference and working...
memory errors. A significant reduction in the time spent in freezing was also observed compared to rats fed with normal diet.

Students:

14. Pathophysiology of Skeletal muscle in Amyotrophic Lateral Sclerosis (ALS) - An experimental study in a rat model. Ms. Shruthi S. Guides: Dr. TR Raju, Dr. Gayathri N, Dr. Phalguni Anand Alladi, Dr. A. Nalini Professor (Funding by CSIR- SRF)

To investigate the ALS-CSF (Amyotrophic Lateral Sclerosis-Cerebrospinal Fluid) induced changes in the skeletal muscle in rat pups, they were intrathecally injected with ALS-CSF on 3rd, 9th and 14th day, and sacrificed on 16th day. The extensor digitorum longus muscle were dissected out. The expression of key proteins of the NMJ, calpain and rapsyn were determined by immunohistochemistry followed by the quantification of mean fluorescence intensity. The expressions of these proteins were found to be altered suggesting neuro muscular junction damage. Consistent with immunohistochemistry results, western blot analysis also showed similar results. The expression calpain was upregulated and rapsyn expression was down regulated

a) Altered rapsyn and calpain expression post ALS-CSF injection

Representative confocal images of muscle sections stained with antibody against Calpain (FITC) and Rapsyn (CY-3) proteins. Scale bar-18.75μm. Note the increased expression of calpain (a & d) and reduced rapsyn (b & e) expression seen in the muscle of ALS-CSF group of rats.

Representative western blot of m-Calpain and rapsyn normalized to myosin. Note the increased and decreased band intensity of calpain and rapsyn respectively in ALS group as compared to NC.

15. Directed differentiation of human embryonic stem cells into motor neurons, their characterization and use as a cellular model for sporadic amyotrophic lateral sclerosis. Ms. R Sumitha. Guides: Dr. TR Raju, Dr. TN Sathyaprabha, Dr. A Nalini (Funding by ICMR- SRF)

In this study, the investigators determined the ultra-structural changes of the hESC derived motor neurons following ALS-CSF exposure. Under control conditions, motor neurons had plasma membrane and nuclear membrane with intact double membrane and well-organized cytoplasm. The nucleus was compact with homogenously distributed chromatin. The cytoplasm had several mitochondria which were oval or round with the cristae visible and well developed. Golgi was well developed and had flattened cisterns. ER was well developed with polyribosomal rosettes. The ALS-CSF exposed cells showed the characteristics of apoptosis such as chromatin condensation in the nucleus and vacuolation in the cytoplasm. The nucleus was deformed with discontinuous nuclear membrane. In some cells, shrunken nucleus, chromatin margination along with diluted cytoplasm could also be observed. The mitochondria were dilated with

Histogram representing the expression of calpain and rapsyn levels in the study groups. Note that the expression of calpain is significantly upregulated in ALS group (** p < 0.01, NC vs.ALS, $p < 0.01, SC vs.ALS). Note that the expression of rapsyn is significantly down regulated in ALS group (* p < 0.05, NC vs.ALS), n=5.
electro-lucent matrix. Golgi had an abnormal configuration wherein the cisterns were condensed, round and closed (fig).

The histograms show the respiratory chain activity measured in the stem cell derived motor neurons; Complex I, II, IV were significantly reduced in the ALS-CSF exposed motor neurons and Complex III activity showed a trend of decrease compared the cells maintained under normal condition and exposed to NALS-CSF.

16. Functional impairment of motor neurons in a rat model of sporadic amyotrophic lateral sclerosis. Mr. Sanjay Das. Guides: Dr. TR Raju, Dr. Laxmi T Rao (Funding by ICMR-SRF)

After infusion of ALS-CSF serially at P3, P9 and P14, rotarod performances were recorded from 5 to 17 rpm for P16 days old rat pups and from 5 to 35 rpm for P22 days old pups for 2 minutes. A motor deficit was found as the ALS-CSF infused pups were falling early compared to control one. At 7rpm for P16 pups there was a significant difference, whereas difference started to get noticed at 20 rpm onwards for P22 days old rat pups. Based on this result, at fixed speed 7rpm for 16,17 and 18 days and at 20rpm for 22, 23 and 24 days, rotarod experiment showed decline in performances in ALS-CSF treated group compared to the control one.

17. Neural correlates of well-being in long term rajayoga practitioners - A multimodal study. Dr. Ajay Kumar Nair. Guides: Dr. Bindu M Kutty, Dr. John P John, Dr. Seema Mehrotra

Rajayoga practitioners in long term (n=36, 14,240 hours of meditation) and short term (n=25, 1050 hours) groups showed higher positive affect, lower negative affect, and higher psychological well-being than controls (n=25). Meditators could rapidly shift between meditation and rest states (indexed by theta power changes in long term, and lower alpha changes in short term group) while controls could not. The groups showed distinct practice related changes in P300, ERN, CD and N170 measures. Resting state fMRI revealed neuroplastic changes as long term group had reduced functional connectivity as compared to the short term group at rest.
Response locked Topography plot related to Error Positivity – post response processing. LTP: long term practitioners, STP: short term practitioners, ZTP: Zero term practice group; Cor.: Correct trials, Incor.: Incorrect trials. Diff.: between condition differences, with red dots indicating statistically significant differences (p < 0.05 using Montecarlo cluster based statistics with 2000 random partitions)

18. Behavioral validation of cognitive dysfunction in a rat model of schizophrenia. Ms. Neethi Prem. Guides: Dr. Bindu M Kutty, Dr. Laxmi T Rao, Dr. John P John

**Positive and Negative Affect Scale-Results**

<table>
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<tr>
<th>Effect Type</th>
<th>Practitioner Type</th>
<th>Count</th>
<th>Mean</th>
<th>S.D.</th>
<th>t-value</th>
<th>p-value</th>
<th>1-tail sig.</th>
<th>Cronbach’s α</th>
<th>K-S Test</th>
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<tr>
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<td>0.83</td>
<td>p&gt;0.05</td>
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<tr>
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<td>2.37</td>
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Table 1: Grey shaded areas indicate the areas of statistically significant differences between novices and seniors.

**Psychological Well-Being Scale-Results**

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<td>t=2.32</td>
<td>0.01</td>
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<td>p&gt;0.05</td>
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<tr>
<td></td>
<td>Seniors</td>
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<td>26.60</td>
<td>4.04</td>
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</table>

Table 2: Grey shaded areas indicate the areas of statistically significant differences among novices and seniors.
Open Field Test (OFT), Social Interaction Test (SIT) and PrePulse Inhibition (PPI) to assess locomotor hyperactivity, deficits in social interaction and sensory gating, respectively. Following these tests the same animal were subjected to 8-arm baited radial arm maze (RAM) task to assess working memory. The investigators have demonstrated that, while the animals did not show hyperactivity in OFT, social interaction and sensory gating were impaired. Also, the animals did not show working memory deficit in 8-arm baited RAM task.

19. Vijayadha Meditation and well-being: A neuro-psycho-physiological study. Dr. Ratna Jyothi. Guides: Dr. Bindu M Kutty, Dr. Ravindra Panth, Dr. Seema Mehrotra (Funding by DST– Cognitive Science Research Initiative)

Vijayadha meditation proficiency related subjective experience of well-being data using Positive Psychology Questionnaires has been surveyed and analyzed. Positive Psychology Questionnaires (based on Western perspective) were utilized along with Vijayadha based well-being questionnaires. Seventy-five participants’ data has been considered for PANAS and PWB survey. They were categorized into novices and seniors. Data has been entered separately for positive and negative scores of PANAS and PWB.

PANAS results show that seniors have significant lower scores for negative affect. Results of PWB show seniors have significant higher overall PWB apart from Mastery and Competence and Positive Relations.

20. Ventral subiculum and anxiety behavior: Impact of circadian desynchrony on ventral subiculum lesion-induced anxiety behavior. Mr. Subhadeep Dutta Gupta. Guides: Dr. Bindu M Kutty, Dr. BS Shankaranarayana Rao (Funding by DBT and NIMHANS)

The study demonstrated ventral subicular lesion (VSL)-induced anxiogenic behavior in rats and reversal of the anxiety-like behavioral features following exposure to the short photoperiod regime (SPR) of 06/18 h light–dark cycle for 21 days. The VSL rats exhibited anxiety-like behavior in the elevated plus maze and in the light–dark exploration test. Further, neurodegeneration of hypothalamic nuclear groups including the paraventricular nuclei, suprachiasmatic nuclei and dorsomedial hypothalamic nuclei in VSL rats was also observed. Interestingly, the VSL rats on SPR exhibited anxiolytic behavior, elevated core body temperature and daily food consumption, and decrease in adrenal and splenic weights.

21. Assessment of EEG in practitioners of vipassana meditation: A nonlinear analysis. Mr. Rahul Venugopal. Guides: Dr. Bindu M Kutty, Dr. Prasanta Kumar Ghosh (NIMHANS Fellowship)

EEG signals may be considered as an emergent phenomenon, the quantification of the complexity of a system is one of the aims of nonlinear time series analysis. The study aimed at exploring the time domain approach for the study of complex behavior of electrical activity of brain during Vijayadha meditation using nonlinear methods. Permutation entropy and fractal dimension are two nonlinear parameters that reflect the inherent complexity and self-similarity of patterns respectively. The results show that the complexity measures show a decreasing trend with meditation proficiency in Vijayadha meditators.

Permutation entropy scalp topoplot and p value plot across meditative states and across groups


During lucid dreaming, there is enhanced awareness of the self during REM sleep and is associated with activation of many brain areas that are otherwise inactive at during non-lucid REM stage. Initial studies on lucid dreaming; using polysomnography and questionnaires have given insights into the basic psychological, polysomnographic and behavioural aspects of lucid dreaming. In the present study, we induced lucid dreams in healthy controls through Reality testing, Intention technique, Autosuggestion and by providing Acoustic stimulus. In current study, the investigators observed increase in alpha and beta activity in the parietal and frontal regions - areas related to
semantic understanding and abstract thinking respectively. A trend in increase in alpha activity in Vipassana Meditators during REM sleep suggestive of increased awareness during sleep was also seen.

23. A study to identify potential biomarker/s for diabetic peripheral neuropathy. Ms. Anu P John. Guides: Dr. TN Sathyaprabha, Dr. Anita Mahadevan, Dr. R Anil Kumar, Karnataka Institute of Diabetology, Bangalore (NIMHANS Fellowship)

The study aims to explore the association between autonomic function, small fibre density changes, nerve conduction velocity reduction and various biochemical parameters (Serum sFas and Gamma glutamyl transferase) with the focus to identify biomarker/s for diabetic peripheral neuropathy. The four groups included are Diabetic group, Prediabetic group, Diabetic with Neuropathy group and Healthy controls. All the subjects will undergo autonomic function tests including Heart Rate Variability, Conventional Cardiac Autonomic function tests, Quantitative Sudomotor Autonomic Function Tests, Skin biopsy for Intraepidermal Nerve Fiber Density examination and serum biochemical parameters of SFas and Gamma glutamyl Transferase.

24. Autonomic, biochemical and clinical profile of probable multiple system atrophy (MSA). Dr. Rukmani MR. Guides: Dr. TN Sathyaprabha, Dr. Ravi Yadav, Dr. Binukumar B

This research work aims at prospectively studying the autonomic function, rate corrected QT intervals (QTc) and levels of serum alpha synuclein in probable MSA and correlate them with objective clinical scales of disease progression (Unified MSA rating scale) at baseline and at six months and twelve months follow-up. It is a prospective cohort study with 51 probable MSA cases and 51 age and gender matched healthy controls.

25. Role of amygdala in stress-induced cortical plasticity. Mr. Sunil Jamuna Tripathi. Guides: Dr. BS Shankaranarayana Rao, Dr. TR Raju (Funding by CSIR-SRF)

Repeated stress is associated with hyper-ramification and microgliosis, which are manifested as cognitive deficits. The basolateral-amygdala (BLA) exerts a positive regulation of the HPA axis and undergoes hypertrophy following stress. It is not known if the BLA hyperactivity is responsible for the stress-induced hyper-ramification of microglial cell in the prefrontal-cortex (PFC). Accordingly, the investigators evaluated if inactivation of BLA could prevent the stress-induced aberrant microglial morphology. The inactivation of BLA during stress prevents hyper-ramification of microglia in the PFC. These results indicate that the BLA plays a regulatory role in the stress-induced deleterious effects on the microglial morphology in the PFC.

26. Depression-induced cognitive deficits: effect of modulation of glutamatergic transmission and brain stimulation reward. Ms. Suwarna Chakraborty. Guides: Dr. BS Shankaranarayana Rao, Dr. TR Raju

Major depression is a severe debilitating psychiatric disorder associated with cognitive impairments. Unfortunately, lack of complete remission or relapse is common with most of the medications that target monoaminergic system. The investigators hypothesized that restoring normal glutamatergic homeostasis would restore depression-induced alterations. The effect of N-acetyl-cysteine, a glutamatergic modulator on depression-induced morphological changes in hippocampus and amygdala was investigated. The depression-induced decline in volumes of CA1, hilus, dentate-gyrus and hypertrophy of basolateral-amygdala were reversed by chronic N-acetyl-cysteine treatment. These results indicate that maladaptive morphological changes in
Depression can be restored by chronic treatment with an acetylating agent such as N-acetyl-cysteine.

Depression-induced volumetric alterations in Hippocampal CA1 subfield, Dentate Gyrus, Hilus and Basolateral amygdala were reversed by chronic treatment with N-acetyl-cysteine. (A) Hippocampal CA1 subfield (B) Dentate gyrus (C) Hilus and (D) Basolateral amygdala. Data is expressed as Mean ± SEM. One-way ANOVA followed by Tukey’s post hoc test ***p<0.001, **p<0.01, *p<0.05 vs. Normal Control, ###p<0.001, ##p<0.01 vs. Depressed. Normal Control = Naïve animals (n = 6), Depressed = Neonatal clomipramine administered animals (n = 6), Neonatal Saline administered (n = 6), Depressed + Saline = Depressed animals administered with saline, Depressed + NAC 50 = Depressed animals treated with N-acetyl-cysteine at a dose of 50 mg/kg, body weight (n = 6), Depressed + NAC 100 = Depressed animals treated with N-acetyl-cysteine at a dose of 100 mg/kg, body weight (n = 6), Depressed + Fluoxetine 10 = Depressed animals treated with fluoxetine at a dose of 10 mg/kg, body weight (n = 6), N-acetyl-cysteine, fluoxetine or saline administrations were performed for 14 days through intraperitoneal route.

**27. Cellular and molecular basis of temporal lobe epilepsy-induced cognitive deficits: Role of enriched environment and levetiracetam treatment.** Mr. Raghava Jagadeesh Salaka. Guides: Dr. BS Shankaranarayana Rao, Dr. BN Srikumar, Dr. Bindu M Kutty (Funding by ICMR-JRF)

Temporal lobe epilepsy is the commonest form of all epilepsies and management with anti-epileptic drugs is the first choice. However, drug resistance and comorbid conditions like cognitive impairment pose challenges. Previously, investigators demonstrated that a combination of levetiracetam treatment and exposure to enriched environment (EE) reduced seizures and ameliorated epilepsy-induced cognitive deficits. To understand the cellular mechanisms, the investigators are evaluating the effects of levetiracetam and EE on hippocampal synaptic plasticity in the lithium-pilocarpine animal model of status epilepticus (SE). Basal synaptic transmission and also long-term potentiation are severely impaired in pilocarpine-administered rats. Further studies with levetiracetam and EE are ongoing. These studies have implications in the development of non-pharmacological strategies to manage epilepsy and its co-morbidities.

**28. Mechanisms of epileptogenesis: modulation of gabaergic and neurotrophic support and its effects on synaptic plasticity, sleep and cognitive behaviour.** Ms. Kala P Nair. Guides: Dr. BS Shankaranarayana Rao, Dr. Bindu M Kutty (Funding by UGC - RGNF - JRF)

Temporal lobe epilepsy is a chronic neurological disorder and is the most common form of refractory epilepsy. Reorganization of excitatory and inhibitory circuits in the hippocampus following recurrent seizures has been proposed to underlie the development of chronic seizures in the temporal lobe epilepsy. The loss of inhibitory neurons in chronic epilepsy might be responsible for generation of spontaneous recurrent seizures. Hence, the modulation of GABAergic transmission during epileptogenesis and mechanisms underlying the generation of spontaneous recurrent seizures are being assessed. Further, TLE is associated with depression, cognitive impairment and sleep disturbance. Hence, the effect of GABAergic and neurotrophic (BDNF) modulation on synaptic plasticity, sleep and cognitive behavior in chronic epilepsy is being evaluated.

**29. Prenatal valproic acid exposure in rats: The neural mechanism of changes in attention.** Ms. Kumari Anshu. Guides: Dr. Laxmi T Rao, Dr. Shoba Srinath (Funding by UGC)

Autism spectrum disorder (ASD) is a childhood neurodevelopmental disorder. Attentional impairments are one of the early signs of autism. How attentional atypicalities might contribute to the manifestation of ASD core symptoms is not yet delineated.
In this study, attentional processing in prenatal valproate (VPA) exposed male and female rats, a well-established animal model of autism, using the 5-CSRTT (sustained attention task) was assessed. As compared to controls, male and female VPA rats had progressively lower accuracy with increasing attentional demands during 5-CSRTT training, and further performance decrements when subjected to task manipulations.

![Fig. A. Attentional impairments in VPA rats.](image)

Male VPA rats were less accurate than CON rats at the onset and end of the training while female VPA rats had this deficit only at the toughest level. The horizontal line indicates the 80% accuracy performance criterion. Data expressed as mean ± SEM. n = 16 VPA male rats, 13 VPA female rats, 16 CON male rats and 13 CON female rats. Linear mixed effects modelling followed by pair-wise comparisons with holm’s correction. Differences between treatment groups (VPA vs. CON): *** p<0.001, *p<0.05. Gender differences within each treatment group (Male vs. Female): ### p<0.001, ## p<0.01.

![Fig. B. Task manipulations had differential effects on baseline response accuracy in the different rat groups.](image)

vSD manipulations degraded accuracy only in VPA rats while vSD + vITI challenges affected all rats except CON females. vITI did not impact accuracy in any group. Data expressed as mean ± SEM. n = 16 VPA male rats, 13 VPA female rats, 16 CON male rats and 13 CON female rats. Linear mixed effects modelling followed by pair-wise comparisons with holm’s correction. Differences between baseline for each treatment groups (VPA vs. CON): $$\$\$\$ p<0.001. Gender differences within each treatment group (Male vs. Female): # p <0.05, ^ p<0.1.

**30. The role of constraint induced movement therapy (CIMT) in cortical plasticity in animal model of intracortical ischemic stroke.** Ms. Nesin Mathew. Guides: Dr. Laxmi T Rao, Dr. Anupam Gupta (Funding by UGC)

Constraint Induced Movement Therapy (CIMT) is identified to be well effective in regaining the functional activity of paretic upper arm even in chronic stroke cases. The present study is aimed to understand the neural plasticity mechanisms involved in the motor functional recovery after CIMT.

Behavioural recovery was associated with dendritic remodelling in motor cortex, both in layer III and V pyramidal neurons. Also the interhemispheric cross-talk between the primary motor cortex was studied using Biotinilated dextran amine tracing. The study shows CIMT after ischemic stroke had beneficial effect on improving forelimb skilled movement through dendritic remodeling, especially in basal dendrites of pyramidal neurons.

**31. Early maternal separation stress-induced anxiety and its relation to anterior cingulate cortex functions in processing of emotional tasks.** Mr. Maltesh Kambali. Guides: Dr. Laxmi T Rao, Dr. Ravi S Muddashetty
Early Life stress such as Maternal Separation and isolation stress (MS) is known to affect cognitive and emotional behavior predisposing an individual to psychiatric disorders, substance abuse and addiction in adulthood. In this study, it was found that MS enhances sustained attention ability whenever there is an attentional challenge compared to Control rats. Further MS rats showed better control on impulsive behavior rather than with compulsive behavior. It may lead to compulsive substance abuse and cognitive inflexibility, which was evidenced in social behavior. MS rats showed impaired social novelty behavior, indicating impaired social cognition and inflexibility in social behavior.

The ongoing study compared between Normal Rats (NMS) and Maternal Separation Stress Rats (MS): the attentional parameters, executive behavioral control parameters in 5-CSRTT and social behavior in terms of social motivation and social novelty. Results are shown in below figures:

### 32. Pathophysiology of sleep in rats prenatally treated with valproic acid. Dr. UD Kumaresan. Guides: Dr. Laxmi T Rao, Dr. BN Srikumar

Autism Spectrum Disorder (ASD) is a lifelong neurodevelopmental disorder with worldwide prevalence of 1.2%. In addition to core features children with ASD have sleep abnormalities such as increased sleep latency, intermittent awakening and increased REM density reported in human studies but not much explored in animal models of autism. In the present study, the sleep-wake architecture in prenatally induced Valproic acid (VPA) rat model of autism was examined. VPA rats were evaluated for autism like features via a series of behavioral phenotypic assays—anxiety, social cognition, repetitive behavior and sensory motor integration followed by polysomnography to evaluate sleep architecture. The results showed repetitive behavior and trend in abnormal sensory motor integration.

The ongoing study compared between Normal Rats and prenatal valproic acid injected rats: Results are shown in below figures.
The enzyme 5-Reductase (5-R) catalyzes the formation of dihydroxytestosterone, which is involved in male pattern baldness and benign prostatic hyperplasia. Finasteride inhibits 5-R and is used to treat both these conditions. Several clinical studies show that chronic finasteride treatment induces persistent depression, suicidal thoughts and cognitive impairment. The neural mechanisms underlying these effects of finasteride are not known. Accordingly, the changes in neurochemistry, synaptic plasticity and behavior in the chronic finasteride rat model are being evaluated. In the preliminary study, repeated administration with finasteride for 7 days in male Wistar rats induced depression-like behavior, which is resistant to fluoxetine treatment.

34. Ontogenesis of Nigral Dopaminergic Neurons and Electrophysiological assessment of Substantia Nigra of Crossbreds of two Mice Strains with Differential Susceptibility to 1-Methyl-4-Phenyl-1,2,3,6-Tetrahydropyridine (MPTP). Mr. Vidyadhara DJ. Guides: Dr. Phalguni Anand Alladi, Dr. TR Raju

Epidemiological studies reveal that Asian-Indians are less vulnerable to Parkinson’s disease (PD) than the Caucasians. Interestingly their admixed population is at much lesser risk. The investigators are studying the mechanisms governing this phenomenon using mice strains with differential susceptibility to Parkinsonian toxin MPTP. The MPTP-susceptible C57BL/6J, MPTP-resistant CD-1 and their F1 crossbred mice were examined. The evidences so far provide molecular, cytomorphological, behavioural and ontogenic basis for resilience in CD-1 and the crossbreds against MPTP-toxicity, which may be envisaged to human phenomenon of differential prevalence of PD. Electrophysiological correlates for the same in adult mice are also being studied.

35. A study on the mechanisms of action of Chitotriosidase – Relevance to pathophysiology of sporadic ALS. Ms. Rashmi V Savant. Guides: Dr. Vijayalakshmi K, Dr. TN Sathyaprabha (Funding by UGC)

The present study aims at elucidating the role of Chitotriosidase (CHIT-1) in immunomodulation. CHIT-1, a biomarker of sporadic ALS when intrathecally injected into rat neonates induces reactive gliosis in spinal cord including the area around central canal, indicative of its neuroinflammatory role and possibly blood brain/blood spinal cord (BBB/BSCB) barrier breach. It is also reported that tight junction proteins are down-regulated in post-mortem samples of ALS patients. The investigators are therefore performing immunohistochemistry of tight junction protein ZO-1, to examine its role in BBB/BSCB breach. Also, morphological changes are being studied by H&E staining.

36. Assessment of developmental apoptosis and mitochondrial responses in F1 crossbreds of two mice strains with differential sensitivity to 1-Methyl-4-Phenyl-1, 2, 3, 6-Tetrahydro-Pyridine. Mr. H Yarreiphang. Guides: Dr. Phalguni Anand Alladi, Dr. TR Raju, Dr. BK Chandrasekhar Sagar (Funding by UGC – SRF)
Fig. 1. ‘k’ represents merged confocal photomicrograph of GDNF (red) co-labeled with GFAP (green) depicting the striatum and corpus callosum (cc). m–t representative photomicrographs of GDNF immunofluorescence stained striatum. Note a significantly higher basal levels in C57BL/6J compared to other strains (l–p *p < 0.05 v/s CD-1, **p < 0.01 v/s F1X1, *p < 0.05 v/s F1X2). MPTP significantly declined its expression only in C57BL/6J (l, m, q **p < 0.01 v/s normal). Note a marginal GDNF increase in CD-1 (l, n, r), F1X1 (l, o, s) and a significant increase in F1X2 after MPTP (l, p, t ****p < 0.0001 v/s normal). Scale bar 600 μm

MPTP depleted the GDNF expression in striatum: Quantitative analysis showed C57BL/6J had significantly higher basal GDNF levels (Fig.1). Further, MPTP significantly reduced GDNF expression only in C57BL/6J. Interestingly, a trend mimicking compensatory increase was observed in CD-1 and F1X1 after MPTP, which was highly significant in F1X2. The findings of enhanced GDNF, in the protected strains, following MPTP-insult may also explain the reduction in Caspase-3 in them. It is likely that the enhanced GDNF rescues the neurons by blocking the expression of Caspase-3 following MPTP administration.

Fig. 2. Representative photomicrographs showing Terminal deoxynucleotidyl transferase mediated dUTP nick end labeled (TUNEL) dopaminergic neurons in saline-treated mouse brain section and following MPTP treatment. Images (a & b) are showing TdT-labelled cells in the SNpc which are TH-negative (A) and TH-positive (B) cells respectively. Nuclease treatment causes DNA degradation in most of the cells and is hence considered as a positive control. Maximum cell death and extended developmental apoptosis was observed in C57BL/6J mouse (d). All images are × 100 magnification. Scale bar: 25 μm

The Crossbreds revealed reduced caspase-3 expression upon MPTP administration: Caspase-3 which is an executioner caspase protein in the process of apoptosis was studied on the midbrain sections using immunofluorescent labelling. It was found to be localized in the cytoplasm. Quantification of its expression in the control mice of different strains showed that the basal cellular caspase-3 expression in SNpc was comparable amongst all the strains. Interestingly, its expression reduced significantly in both the crossbreds following MPTP administration, along with a mild increase in C57BL/6J mice (**p < 0.001 v/s normal).

Parkinson’s disease (PD) is characterized by selective loss of dopaminergic neurons in substantia nigra pars compacta (SNpc). The prevalence of PD is highest among Hispanics, followed by non-Hispanic Whites, Asian Indians, and African non-Whites. Similarly different mice strains also show differential susceptibility to MPTP neurotoxin. Among the mice strains, the C57BL/6J mice are most susceptible whereas CD-1 white mice are resistant to MPTP. The present study is planned to systematically investigate the
glial responses, in the substantia nigra of two different mice strains (C57BL/6J & CD1) in terms of aging and inflammatory responses to MPTP.

**ELISA:** Inflammatory responses in Substantia nigra pars compacta after giving MPTP

ELISA results show basal level expression of TNF-α is higher in C57BL/6 mice compared to CD-1 mice. Upon MPTP administration C57BL/6 mice showed significant increase of TNF-α, which peaks on day 1 and slowly decreases on day 4 and day 7 whereas in CD-1 mice the changes were negligible. There was no significant difference in the expression of IL-1β and IL-6 between the strains. The anti-inflammatory response by TGF-β level was significantly upregulated following-MPTP administration i.e. on day 1 in CD-1 whereas the changes in C57BL/6 mice, was not significant. The expression levels of IL-4 and IL-10 between the strains was comparable. Thus, the results suggest that upon MPTP administration; as compared to CD-1 white mice, the C57BL/6 mice showed significantly higher level of proinflammatory cytokines (TNF-α, IL-1β, IL-6) on post MPTP day 1, day 4 and day 7, whereas the compensatory response by anti-inflammatory cytokines (TGF-β, IL-4, IL-10) was low, suggesting that CD-1 mice are better protected against neuroinflammation than C57BL/6 mice.

**38.** A study of circulating biomarkers in Parkinson's disease with dementia. Ms. Aditi Naskar. Guides: Dr. Phalguni Anand Alladi, Dr. Pramod Kumar Pal, Dr. Shantala Hegde, Dr. Jitender Saini

It is extensively debated whether Parkinson's disease with Dementia (PDD) and Parkinson's disease (PD) are distinct disorders or whether they represent different presentations of the same disease. There are no preclinical methods to determine which of the patients with mild cognitive impairment (MCI) will progress into PDD. Therefore, the study intends to identify the CSF biomarkers, if any. So far, the levels of 4 main biomarkers such as α-synuclein, total tau, phosphorylated tau and A 42 and their co-relation have been investigated to distinguish between several entities.

The results show that the level of Amyloid (1-40) is higher in Parkinsonism with MSA and in the other groups an overlap can be observed. Thus, known biomarkers cannot be used for the identification of biomarkers, and an unbiased biomarker(s) study using Proteomics is proposed.

**39.** A comparison of expression of nigrostriatal interneuronal proteins GAD-67 and Calretinin in adult C57BL/6 and CD1 mice. Ms. Bidisha Bhaduri. Guide: Dr. Phalguni Anand Alladi

Epidemiological studies reveal an ethnic bias of Parkinson's disease (PD) prevalence among the Caucasians and Asian individuals. It has been reported that C57BL/6 mice is more susceptible to MPTP-induced Parkinsonism-mimicking toxicity whereas CD1 mice is resistant. Besides nigrostriatal degeneration involving dopaminergic neuronal loss, recent studies have shown interneuronal involvement and its consequences in PD. Calbindin, calretinin and parvalbumin the calcium binding proteins play a crucial role in maintaining the Ca2+ homeostasis. GAD67-immunoreactive interneurons are the other prominent set of GABAergic interneurons. Western blot based evaluation of these interneuronal proteins in striatum and substantia nigra in C57BL/6 and CD1 mice showed differential expression of these proteins and hence may have a possible role of interneurons in the differential susceptibility to PD.
It was found in the study that calbindin and GAD67 immunoblots show no major difference between C57BL/6j &CD-1 mice strains, whereas calretinin levels were low only in the striatum of the C57BL/6j mice.

### Neurovirology

1. **Strengthening surveillance for Japanese encephalitis in India.** Investigators: Dr. V Ravi, Dr. Anita Desai, Dr. Reeta Mani, Dr. Ravi Yadav (Funding by CDC, USA)

Acute Encephalitis Syndrome (AES) is a major public health problem in India. Although Japanese encephalitis virus (JEV) is the major cause of AES identified in India (ranging from 5-35%), no systematic efforts have been made to determine the precise etiology of all AES cases. A network testing ten laboratories within India was established.

Of the total of 3363 patients clinically suspected of AES, 3321 were investigated during the year 2016 as part of the project. Out of the 3321 patients investigated, both CSF and serum samples were obtained at the time of admission from 2049 patients (61%), CSF alone was obtained from 488 patients (15%) and serum alone was obtained from 781 patients (23%).

Overall there was a perceptible decrease in the number of AES cases positive for JEV (427/3321; 13%) as compared to 2015 (426/2262, 19%) and 2014 (260/1253, 21%). Serum samples tested for non-JE AES pathogens were positive for Scrub typhus IgM (23%), Dengue IgM (8%) and West Nile virus IgM (2%). CSF samples tested for non-JE AES pathogens were positive for Streptococcus pneumoniae (1.5%), Hemophilus influenzae (0.5%), HSV (0.3%) and Enterovirus (0.2%). Overall, the algorithm adopted in the network during the year 2016, enabled identification of etiological agents in 1224/3321 (37%).

Among them JEV accounted for 13% (427/3321), while Scrub Typhus accounted for 23% (532/2356) and Dengue was identified in 8%(182/2288).

2. **Immune signatures of responses to infection with dengue virus.** Investigators: Dr. Ravi V, Dr. Anita Desai, Dr. Ruth Montgomery,Yale University, Dr. Priti Kumar, Yale University (Funding by NIH-DBT)

The project aimed to decipher immune signatures in response to Dengue virus infection in a dengue endemic area by comparing the responses in DENV infected patients and DENV exposed healthy controls. The investigators recruited 42 healthy controls and 120 DENV infected patients in the study. The age of the study subjects ranged from 21 to 60 years. All the patients recruited in the study were positive for NS1 antigen. None of the patients developed either DHF or DSS. Plasma and PBMCs from healthy controls, patients with acute infection and in convalescence, and household contacts of patients were collected and cryopreserved. Multi-parametric flow cytometry was performed on the PBMCs using different antibody panels to identify specific sub-populations of cells. Dengue virus (DENV) serotyping was carried out by real time PCR.

An increase in the total number as well as activated CD4 and CD8 T cells in dengue patients was found. The naïve CD8 T cells were decreased in dengue patients. The number of CD4 central memory T cells and effector memory CD8 T cells were elevated in dengue patients in addition to the Th2 cells. Tregs were found to be unaltered in acute infection but significantly increased in the convalescent phase. Memory Tregs were increased in the convalescent phase in contrast to reduced naive Tregs. Increased percentages of memory B cells and plasma blasts in patients were also found.

It was observed that DENV infection resulted in the depletion of myeloid lineage cells such as monocytes and myeloid DCs. The plasmacytoid DCs were also depleted in patients. Cytotoxic NK cells such CD56dimCD16hi cells were found to be decreased in dengue patients, while regulatory CD56hiCD16dim NK cells were increased in dengue patients.

3. **Understanding the biology of Chikungunya virus infection in permissive cell lines and mosquito vectors.** Investigators: Dr. Anita Desai, Dr. Brij Kishor Tyagi (CRME-ICMR, Madurai), Dr. SN Madhusudana (Funding by DBT)

This study was designed to address the hitherto unraveled issues related to CHIKV biology and understand the dynamics of vector competence by addressing the presence, distribution and behavior of key molecules playing a role in entry of CHIKV as well as the role of intrinsic factors involved in virus replication in the vector.

HSC 70, a ubiquitously expressed protein on the surface of C6/36 cells, was found to interact and play a role in CHIKV entry. HSC 70, although present on C2C12 cell surface does not play a role in CHIKV entry. This demonstrates that CHIKV employs different cell surface molecules to enter different cell types. Additionally, mass spectrometry analysis of the ~66 kDa ~ CHIKV reacting protein band on C2C12 cells revealed that V-ATPase catalytic Subunit A protein could be a putative receptor candidate. Dose dependent infection inhibition assay using anti V-ATPase Catalytic Subunit A antibody by IFA and virus yield reduction assay (plaque assay) did not show any comparable decrease in infection with untreated controls. Therefore, it was inferred that
V-ATPase catalytic subunit A protein, although present in the plasma membrane and interacted with CHIKV protein in the VOPBA, is not present as a surface protein to serve as a receptor but could be labeled as one of the interacting proteins.

4. National Family Health Survey - 4. Investigator: Dr. Anita Desai (Funding by International Institute of Population Sciences, Mumbai)

The Ministry of Health and Family Welfare, GOI is conducting the National Family Health Survey (NFHS-4) in 29 states and 6 Union territories aiming to provide estimates of health and family welfare indicators at the state and district level for all 640 districts in the country. Knowing prevalence of HIV infection in the general population of the country is also one of the key components of the survey. The International Institute of Population Sciences (IIPS) under direction from MoHFW has identified NIMHANS as one of the 6 laboratories across the country where DBS samples collected from the survey are tested using internationally acceptable protocols and guidelines.

Goa (2 districts), Karnataka (30) and Andhra Pradesh (23) in first phase while Rajasthan (33), Gujarat (26), Dadra and Nagar Haveli and Daman and Diu in phase II are linked to NIMHANS in this survey. DBS samples (15,123) under Phase I were tested, of which 1677 were from Goa, 8185 from Karnataka and 5261 from AP. In the Phase II, 25884 samples were received from Rajasthan (13069), Gujarat (11724), Daman & Diu (726) and Dadra & Nagar Haveli (365). The department has completed testing of 17640 samples from Rajasthan (13069), Daman & Diu (726), Dadra & Nagar Haveli (365) and Gujarat (3480) and remaining 8244 samples are to be completed within 30th June 2017.

5. Role of immune dysregulation in post-partum psychosis. Investigators: Dr. Reeta S Mani, Dr. Manjunatha MV (NIMHANS Intramural Funding/Grant)

Postpartum psychosis (PP) is the most severe postpartum psychiatric illness with an incidence of 1-2/1000 deliveries with an acute onset in the first few days or weeks after delivery. The neurobiology and etiology of puerperal psychosis remains unclear. Among the biological factors, currently the immune system dysregulation has been implicated in the manifestation of postpartum psychosis. Therefore, the current research project seeks to understand the role of immune system in development of postpartum psychosis. The study proposed to perform immuno-phenotyping of peripheral blood mononuclear cell (PBMC) samples and determine the levels of various cytokine and chemokine in serum of women with postpartum psychosis (PPP) as compared to those with acute psychosis, healthy post-partum and healthy non-postpartum women. The cytokines, IL-17A and IL-8 were found to be significantly elevated in the PP group. Multi-parametric immunophenotyping by flow cytometry revealed significant alterations in subpopulations of T cells, monocytes, NK cells and dendritic cells in the PP group. Naïve CD4 and CD8 T cells were found to be significantly decreased in women with PP as compared to HP and HNP women. The women with PP showed significantly reduced proportions of activated CD4 T cells however, the central memory CD4 T cells and activated CD8 T cells were elevated in PP. Regulatory T cells (Tregs) were significantly increased in women with PP as compared to HNP. The CD11c+ myeloid DCs and CD14-CD16+non-classical monocytes showed a marked decline while the CD56brtCD16+- NK cells were elevated in women with PP.

6. Self-sustaining diagnostic project (Molecular Diagnostics). Investigators: Dr. Reeta Mani S, Dr. Manjunatha MV

Through this unique self-sustaining service, molecular diagnostic tests for 10 different viral and bacterial pathogens are being offered by the Department of Neurovirology and Molecular Biology Laboratory, Neurobiology Research Centre. Several patients from NIMHANS have availed these services at concessional rates. Moreover, patients from more than 30 other hospitals (both private and public) are utilizing these services on a regular basis. This service model has proven to be extremely successful and is now entirely self-sustaining.

7. Evaluation of NKT cell based glycolipid adjuvants with Rabies vaccines to improve immunogenicity and long-term protection. Investigators: Dr. Manjunatha MV, Dr. Thirumurugaa KG, TANUVAS, Chennai (Funding by ICMR-DHR)

Rabies is a major national public health problem and the current vaccination against rabies in canines requires multiple doses for accomplishing protective titres of neutralizing antibodies. The need for several doses makes the immunization process challenging as well as expensive. The project aims to develop a novel rabies vaccination approach with NKT cell based glycolipid adjuvant for eliciting protective immune responses with a single vaccine dose. Preliminary experiments in the mouse model to test the efficacy of the glycolipid adjuvanted vaccine by analyzing anti-rabies humoral and cellular responses are underway. The adjuvant appears to enhance titre of neutralizing antibodies. The glycolipid adjuvanted vaccine will subsequently be evaluated in canines and long-term protective efficacy will be tested by determining titres of neutralizing antibodies and memory T cells.

Students:

8. A comparative study of innate and cell-mediated immune responses in human immunodeficiency virus infected
individuals with and without neurotuberculosis. Ms. Deepashri Rao. Guides: Dr. Anita Desai, Dr. V Ravi, Dr. P Satishchandra

The present study was undertaken to gain insights into the immune mechanisms underline HIV –TB co-infection in the CNS. The main objectives of the study were: (1) analysis of frequencies of the T, Natural Killer and dendritic cells subsets (2) functional analysis of HIV and TB specific T cell responses (3) Analysis of mRNA expression of pattern recognition receptors (4) estimation of levels of soluble cytokines, chemokines and granzymes in the plasma and CSF of HIV infected individuals with neurotuberculosis. Further, these findings were compared with other groups (HIVSTB, HIV Asym, NTB, STB and controls).

The hallmark features observed in the immune profile of an HIV infected individual with neurotuberculosis compared to all other disease phenotypes in the present study were as follows: (a) Higher frequency of activated T cell (b) Higher immunosenescence in TCM cells (c) Higher frequency of Tem cells (d) Higher frequency of TEMRA cells.

The highlight of this study is the potential role of these cell subset to serve as possible biomarkers in HIV infected subjects with TB of the CNS, thus enabling therapeutic and control strategies in a co-infected cohort of individuals. This study has thus brought forth the salient immunological mechanisms that are operative in HIV infected individuals with neurotuberculosis which may, in one way or the other, influence the course of tubercle bacilli, thus facilitating the establishment of tuberculosis infection in the CNS.

9. The molecular mechanisms involved in chikungunya virus – Host Cell Interaction. Mr. Ayushman Ghosh. Guides: Dr. Anita Desai, Dr. Gayathri N, Dr. SN Madhusudana (Funding by CSIR-DBT)

This study was designed to delineate fundamental aspects of Chikungunya virus infection process in mosquito cells (C6/36) and mouse myoblast cells (C2C12) with respect to identification of cell surface receptors, CHIKV-induced cytoskeletal changes and the role of lipid rafts in CHIKV infection.

Our experiments confirmed that V-ATPase Catalytic Subunit A was not located on the surface of C2C12 cells. Infection inhibition was not observed by pre-treating C2C12 cells with anti V-ATPase Catalytic Subunit A monoclonal antibody in a dose dependent manner by IFA and plaque reduction assay. Hence this protein might be a CHIKV interacting protein and not a receptor. Infection inhibition was not observed when C2C12 cells were treated with anti HSC 70 monoclonal antibody. Further we also found that HSC 70 was present on C2C12 cell surface as well as the cytoplasm. Hence HSC 70 could be a part of CHIKV receptor complex in C2C12 cells. CHIKV induced changes in the β-tubulin framework in C2C12 cells were documented as observed by confocal microscopy. Further depletion of cell surface cholesterol or lipid rafts by methyl-β-cyclodextrin in C2C12 cells resulted in infection inhibition and reduced release of mature CHIKV particles as observed by plaque assay. At the ultrastructural level, CHIKV did not induce any change in C6/36 morphology until late stages of infection (30h PI). Maturation of CHIKV particles within C6/36 cells leading to budding of mature virions was observed by electron microscopy.


Neurological complications are being increasingly reported among Dengue Virus (DENV) infected individuals from around the world, with considerable evidence for the presence of the virus in the central nervous system (CNS). Comparing the kinetics of infectivity and growth of the four DENV serotypes in neural cells and the involvement of receptors would help understand the neuropathogenesis of DENV.

Immunofluorescence assay was performed to indicate DENV-2 infection in Neuro2a and SHSY5Y cells against controls. The kinetics of the DENV-2 and DENV-3 growth and yield at various time points were studied using the growth curve and plaque assay and IFA at different time points post infection. Protocol was standardized for Virus Overlay Protein Binding Assay (VOPBA) using C6/36 and SHSY5Y cell membrane protein with DENV-1, 2, 3 and 4 serotypes. VOPBA was performed with all 4 serotypes
of DENV on C6/36, SHSY5Y, U87, CHME3 and Neuro2a membrane proteins. The respective interacting bands from SDS-PAGE were excised and subjected to LC-MS/MS analysis. Cell surface expression of HSC-70 on C6/36 cells was analysed by Flow cytometry.

11. Immune responses to Japanese encephalitis virus live attenuated vaccine SA-14-14-2 in humans with special reference to the ‘Original antigenic sin’. Investigators: Mr. Filippo Tatullo. Guides: Dr. V Ravi, Dr. Lance Turtle, Dr. Anita Desai, Dr. Tom Solomon (Funding by NIMHANS and University of Liverpool)

The study aims to examine the immune response to the live attenuated Japanese encephalitis virus vaccine in adult healthy volunteers previously exposed to dengue virus with special reference to the "original antigenic sin" phenomenon. In the past year, the antibody response to JEV (WT and vaccine strain) and dengue virus (1-4) by PRNT was measured. Another aspect of the project is to study the T cell response. Some T cell epitopes have been identified through T cell expansion and intracellular cytokine staining. Analysis of the T cell response before vaccination was completed.

12. Human microRNA expression in dengue viral infection: correlation with disease severity. Dr. Wg Cdr Sunita D Patil. Guides: Dr. Anita Desai, Dr. V Ravi

Dengue virus, an RNA virus belonging to the Flaviviridae family, has four serotypes namely DEN 1-4. WHO estimates 50 - 100 million dengue infections every year with 22,000 deaths. MicroRNAs are small non-coding RNA molecules made up of approximately 22-25 nucleotides, bind to 3'- un-translated region of target mRNAs and regulate host or viral gene expression. In this study we propose to collect blood sample from laboratory confirmed cases of dengue infection and subject the sample to microRNA expression profiling by using the microarray technology. Differentially altered microRNAs will be further studied by RT-PCR. Clinical and laboratory correlation will be done with all the markers to predict disease severity.

13. Role of mitochondria in the pathogenesis of Rabies virus infection. Ms. Harsha PK. Guides: Dr. Reeta Mani, Dr. Srinivas Bharath, Dr. Anita Mahadevan

The major impediment to development of effective therapy for rabies, a fatal viral encephalomyelitis, is the lack of understanding of the basic mechanisms involved in the pathogenesis of the disease. Preliminary reports suggest the possible role of mitochondrial dysfunction and oxidative stress in the pathogenesis of rabies. This study is planned to evaluate the role of mitochondrial dysfunction and oxidative stress in cell models (in various permissive cell lines) and also in brain tissues obtained at autopsy from humans who succumbed to rabies. These findings could delineate the role of mitochondrial alterations in rabies pathogenesis with therapeutic implications.

**Psychopharmacology**

1. A pilot, nonrandomized, open label, prospective comparison of the effects of penfluridol and risperidone on cardiac electrophysiological indices in patients with schizophrenia and related disorders. Investigators: Dr. Chittaranjan Andrade, Dr. Preeti Sinha, Dr. TN Sathyaprabha

Penfluridol is a first generation antipsychotic. No information is available about its effect on the ECG, especially with reference to the QTc interval and heart rate variability. This study seeks to characterize the cardiac electrophysiology of the drug.

**Students:**

2. Electroconvulsive seizure-induced neuroplasticity changes in the rat brain. Dr. Ravi Prabhakar Hegde. Guides: Dr. Chittaranjan Andrade, Dr. B K Chandrasekhar Sagar (Funding by ICMR)

This study examines hippocampal neuroplasticity after single and repeated electroconvulsive shocks in rats which have or have not been exposed to chronic unpredictable stress as an animal model of depression.

3. Alteration of heart rate variability and cardiac electrophysiological variables in a rodent model of brain stimulation. Mr. Nagendra Madan Singh. Guides: Dr. Chittaranjan Andrade, Dr. Jagadisha T (Funding by ICMR)

This study mathematically models heart rate variability as a function of different electrical doses in an animal model of ECT.

4. A randomized, double blind, sham controlled study of transcranial direct current stimulation (tDCS) as an augmentation intervention for the attenuation of motor deficits in patients with acute ischemic stroke. Ms. Ekta Francina Pinto. Guides: Dr. Chittaranjan Andrade, Dr. Anupam Gupta, Dr. Girish Kulkarni (Funding by DST)

This study examines motor, cognitive, and mood outcomes in acute and subacute stroke patients treated with transcranial direct current stimulation as an augmentation of treatment as usual.
1. Autism spectrum disorders and epilepsy - An exploration of the relationship. Investigators: Dr. Shoba Srinath, Dr. P Satishchandra, Dr. S Sinha, Dr. N Shivashankar, Dr. BK Yamini, Dr. SS Meera (Funding by ICMR)

A total of 161 cases have been recruited till now for the study. Of them 115 cases are Autism without Epilepsy and 46 are Autism with Epilepsy. Among these 161 cases, Speech and Language Assessments have been carried out for 130 cases till date. Of them 93 cases are ASD without epilepsy and 37 are with epilepsy. The following tests are being used to assess the subjects Speech and Language level: (a) Receptive Expressive Emergent Language Test -3 (b) Communication DEALL Developmental Checklists (CDDC) (c) Clinical Evaluation of Language Fundamentals –Preschool (CELF-P) (d) Subtest of CELF –P – Pre Literacy Rating Scale and Descriptive Pragmatics Profile. The results are being recorded in the prescribed statistical format for analysis. All the 130 cases recruited for the study also have been given tailor-made intervention programs for home training.

2. Autism and epilepsy – An exploration of a relationship. Investigators: Dr. Shoba Srinath, Dr. Satish Girimaji, Dr. Shekhar Seshadri, Dr. John Vijay Sagar, Dr. Preeti Jacob, Dr. P Satishchandra, Dr. Sanjib Sinha, Dr. N Shivashankar, Dr. Yamini, Dr. SS Meera, Dr. Mariamma Philip (Funding by ICMR)

As part of the study, a total of 350 patients were contacted, out of which 166 cases have been recruited into the study—which included 116 cases of ASD without epilepsy and 50 cases of ASD with epilepsy. A total of 107 EEG, 132 speech and language assessments and 141 psychological assessments have been completed so far. Patient recruitment process is in progress.

3. Imaging and biochemical correlates in children with autism with and without epilepsy. Investigators: Dr. K John Vijay Sagar, Dr. Satish Girimaji, Dr. Shekhar Seshadri, Dr. Shoba Srinath, Dr. Preeti Jacob, Dr. John P John, Dr. Chandrajit Prasad, Dr. Mariamma Philip, Dr. Sonia Bansal, Dr. Rita Christopher (Funding by ICMR)

This study on Autism Spectrum Disorder which uses the neuroimaging techniques like resting state fMRI, T1-structural MRI and Diffusion Tensor Imaging along with biochemical assessments (serum lactate, serum ammonia, urine for abnormal metabolites and Tandem Mass Spectroscopy) in children with Autism Spectrum Disorder with and without epilepsy would help us to understand the functional connectivity and the structural grey and white matter volume changes in Children with Autism spectrum disorder with and without epilepsy. It would also help in the identification of putative biomarkers of the neurobiological substrates.

Ninety more patients are to be recruited for MRI and biochemical investigations to achieve the target sample size.

4. Community child and adolescent mental health service projects. Investigator: Dr. Shekhar Seshadri (Funding by Department of Women & Child Development, Govt. of Karnataka)

With a view to addressing child and adolescent mental health service needs and gaps, the project aims to extend child and adolescent mental health service coverage, particularly to cover those who are most vulnerable. Project implementation entails a comprehensive plan to provide community-based child and adolescent mental health promotive, preventive, and curative care in urban and later in rural sites through direct service delivery and training and capacity building of child care workers from community-based governmental and non-governmental agencies/institutions and professionals, including schools, NGOs, anganwadis and health workers. The specific objectives of the project include: (i) Establishment of community-based child and adolescent services (ii) Training and capacity building of childcare workers and staff from various governmental and non-governmental agencies, including schools (iii) Draw from implementation experiences to develop a comprehensive community child and adolescent mental health service model that may be replicated elsewhere in the country.

The third year of the Community Child and Adolescent Mental Health Service Project is ending.

5. Role of genetics in autism spectrum disorder with or without epilepsy. Investigators: Dr. Satish Girimaji, Dr. Shoba Srinath, Dr. John Vijay Sagar, Dr. Sanjeev Jain, Dr. Meera Purushothaman, Dr. Subbakrishna (Funding by ICMR)

This project is focused on understanding the genetics of ASD and its correlation with epilepsy. Subjects recruited as part of the study are in the age group of 3 to 18 years and are clinically diagnosed with ASD with or without epilepsy. Currently, testing at fragile X FMR1 locus is being carried out for all samples. Followed by this, genes that are linked to both autism and epilepsy will be evaluated with focus on certain genes with greater correlation. This will be evaluated on the basis of previous studies and also based on the clinical data available
for the subjects. The data generated will be correlated with imaging and clinical data available from the sister projects involving the same sample set. Finally, lymphoblastoid cell lines will be generated by Epstein Barr virus (EBV) transformation of peripheral mononuclear cells isolated from subjects to create a bio-respository which can be later accessed for further studies in the future.

6. Study of neural development in an human-induced Pluripotent Stem cell (hiPS) model of primary microcephaly. Investigators: Dr. Shyamala Mani, Centre for Neurosciences, IISc, Bengaluru (Collaborative Project), Dr. Satish Girimaji (Funding by IRHPA, DST)

7. Whole exome sequence analysis to identify novel causative genes for primary microcephaly in Indian families. Investigators: Dr. Arun Kumar, Dept. of MRDG, IISc, Bengaluru (Collaborative Project), Dr. Satish Girimaji (Funding by SERB, DST)

8. A pilot study of MEG spikes and neural networks in children with autism spectrum disorder. Investigator: Dr. John Vijay Sagar (Funding by National Institute of Health – USA)

9. A multidimensional follow-up study of attention deficit hyperactivity disorder (ADHD) symptoms with onset in preschool years understanding the behavioral, environmental and functional aspects. Investigators: Dr. Preeti Jacob, Dr. Shoba Srinath, Dr. Satish Girimaji, Dr. Shekhar Seshadri, Dr. John Vijay Sagar, Dr. Thomas Kishore, Dr. Sreyoshi Ghosh, Dr. SS Meera (NIMHANS Intramural Funding)

Students:

10. A study of eye movements in juvenile-onset obsessive compulsive disorder. Dr. Anirban Ray. Guides: Dr. John Vijay Sagar, Dr. Satish Girimaji, Dr. Shoba Srinath, Dr. Shekhar Seshadri, Dr. Ganeshan Venkatsubramanian

The study examined eye movements in prosaccade and anti-saccade tasks in pediatric OCD through noninvasive, non-contact state-of-the-art machine in a laboratory setting through a camera and computer. A total of 36 cases and 31 controls were recruited for this study. Eye movement parameters were not different in cases compared to controls. Age related trends in parameters were different in cases and controls in ‘gain’ and ‘velocity’ related parameters. ‘Gain’ related parameters also varied with severity. Secondary analysis showed uncorrected errors in anti-saccade task in inversely proportional with school and academics related performance.

Eye movement tracking is a proposed biological marker for psychiatric disorder. Juvenile onset OCD have very little data, if any on eye movement tracking. OCD children group is compared with age, sex matched normal control children in camera based sophisticated eye movement tracking system for anti-saccades and pro-saccades. The study found no difference between OCD group and normal control group with respect to antisaccade and prosaccade tasks.

11. Brief in-patient intervention study of children with Autism Spectrum Disorder: Formalizing an intervention package. Dr. Pooja Panchal. Guides: Dr. Shoba Srinath, Dr. Satish Girimaji, Dr. Shekhar Seshadri, Dr. John Vijay Sagar

Autism spectrum disorder (ASD) refers to neuro-developmental disorder characterized by persistent deficits in social communication and social interaction and repetitive pattern of interests and behaviour. This study was undertaken to formalize the already existing interventions into a package for children and adolescents with ASD and to examine the effect of the package by implementing it on twenty families of children with ASD. Families of children with ASD were assessed at baseline (on admission in the hospital), at the time of discharge and three months after discharge. There was statistically significant reduction in child’s autistic symptoms, behaviour problems and parental stress.

12. Use of transcranial direct current stimulation (tDCS) in child and adolescent onset psychotic disorders: Evaluation of tolerability and clinical utility. Dr. Vinayak Koparde. Guides: Dr. Satish Girimaji, Dr. G Venkatsubramanian, Dr. Shoba Srinath, Dr. Shekhar Seshadri, Dr. John Vijay Sagar, Dr. Preeti Jacob

The study aimed to assess the tolerability and clinical utility of add on tDCS in children and adolescents with Psychotic disorders. Sixteen patients with ICD 10 diagnoses of Psychotic disorders (13-17 years) with mean 15.25 years were recruited. The most common diagnosis was Paranoid schizophrenia (56.3%) followed by undifferentiated schizophrenia (18.8%). tDCS using 2 mA current and 25 sq cm sponge electrodes was administered twice daily for 20 minutes each time. 86.6% patients reported at least one adverse effect, itching (33.3%), burning sensation (33.3%) and tingling sensation (20%). There was significant improvement in BPRS-C, hallucinations, AHRS scores and affective flattening, alogia, anhedonia/sociality compared to baseline.

13. Life skill based intervention for children and adolescents in school bullying. Dr. Megha Mahajan. Guides: Dr. Shekhar Seshadri, Dr. Shoba Srinath, Dr. Satish Girimaji, Dr. John Vijay Sagar, Dr. Preeti Jacob

School bullying is increasingly being reported in children and adolescents in school. It has significant impact on their psychological health and overall development. Victims of school bullying have been
seen to lack certain basic life skills making them more susceptible to school bullying. Hence the study has been planned to empower them with life skills over 6 sessions. Also their experiences and changes would be studied and analysed.

14. A Comparative Study of Children Diagnosed with Autism Spectrum Disorder with and without Regression. Dr. Siddeswara BL. Guides: Dr. Shoba Srinath, Dr. Satish Girimaji, Dr. Shekhar Seshadri, Dr. John K Vijaysagar, Dr. Preeti Jacob

Autism spectrum disorder is a neurodevelopmental disorder. A smaller group of ASD children lose skills overtime. The goal of this study is to compare children diagnosed with Autism Spectrum Disorder (ASD) with history of regression to children without regression. Children diagnosed with ASD at CAP services at NIMHANS were taken after scrutinizing through the predefined criteria. Then children are screened for regression and then moved into either group of ASD with or without regression, followed by assessments of different variables.

15. A follow-up study of treatment emergent side effects in children and adolescents started on SSRI. Dr. Arul Jayendra Pradeep V. Guides: Dr. Preeti Jacob, Dr. Shoba Srinath, Dr. Satish Girimaji, Dr. Shekhar Seshadri, Dr. John Vijay Sagar

This study aims at identifying treatment emergent side effects in children and adolescents on SSRI with focus on studying suicidality, behavior activation profile and general side effects with a baseline assessment and follow up assessment every 2 weeks till 12 weeks with sample size of 50 children. Suicidality was assessed by Columbia Suicide Severity Scale, Behavioural activation was assessed by Treatment Emergent Suicidality and Activation Profile and general side effects were assessed by Toronto Side effects scale.

16. A qualitative study of self-cutting in shelter homes for children. Dr. Rajendra KM. Guides: Dr. Shekhar Seshadri, Dr. Shoba Srinath, Dr. Satish Girimaji, Dr. John Vijay Sagar, Dr. Preeti Jacob

The study aims at understanding self-cutting behaviour in shelter home children, which tends to occur at high rate in this population and consequently care-takers in shelter home face difficulty in providing help and care for these children. The investigators are aiming at understanding the behaviour from three different subjective perspectives, that is, from children who engage in self-cutting, from children who are living in shelter homes but do not engage in any form of self-Injurious behaviour and from care-takers of shelter home who take care of the children. The investigators are also hoping to develop a model to understand the self-cutting and a manual to deal this problem at an individual and a systemic level.

17. Clinical profile and development of intervention package for children and adolescents with primary headache syndromes. Dr. Sreyoshi Ghosh. Guides: Dr. Satish Girimaji, Dr. Shoba Srinath, Dr. Shekhar Shesadri, Dr. John Vijay Sagar, Dr. Preeti Jacob

In this study, children presenting with migraine and tension type headache (TTH) between the ages of 8-15 years who are not on prophylactic medication will be recruited. The purpose of this study is to assess the quality of life and associated conditions in children and adolescents presenting with migraine and TTH. Additionally, the investigators will be designing and offering a psychological and behavioral intervention package without any medication for these children.

18. Study of factors affecting short term outcome of depression in children and adolescents. Dr. Syed Karar Hussain. Guides: Dr. John Vijay Sagar, Dr. Shoba Srinath, Dr. Shekhar Seshadri, Dr. Satish Girimaji, Dr. Preeti Jacob

The study is currently in the recruitment phase and baseline assessments are being done for children with depression and subsequently shall be followed up for 6 months. The study will look into the factors affecting short-term outcome of depression in children and adolescents. It will be a prospective study wherein subjects fulfilling inclusion criteria shall be recruited and assessment shall be carried out at base-line and after 6, 12 and 24 weeks interval under naturalistic treatment as usual settings. Data will be statistically analysed to meet the objectives of the study.

19. A study of short term course and outcome of children with Autism Spectrum Disorder and psychiatric comorbidities. Dr. Siddeswara. Guides: Dr. John Vijay Sagar, Dr. Shoba Srinath, Dr. Satish Girimaji, Dr. Shekhar Seshadri, Dr. Preeti Jacob

Greater emphasis on comorbidity in Autism Spectrum Disorder (ASD) in recent times has resulted in increased acceptance and better management of co-occurring psychiatric conditions as independent entities. Comorbidity and its impact on functioning need systematic study. This study aims to evaluate the clinical profile, diagnostic stability, course and outcome of psychiatric comorbidities associated with ASD. Forty children (3-17 years) with ASD and psychiatric comorbidity are intended to be enrolled into the study. Standardized instruments will be used for evaluation at three time periods viz. baseline (T1), 3rd month (T2), and 6th month (T3).

20. A short term prospective follow-up study of psychosis and mood disorders in children and adolescents with intellectual disability. Dr. Arul Jayendra Pradeep. Guides: Dr. Satish Girimaji, Dr. Shoba Srinath, Dr. Shekhar Seshadri, Dr. John Vijay Sagar, Dr. Preeti Jacob
Children and adolescents with intellectual disability are at higher risk (3-4 times) for the development of psychiatric comorbidities when compared with normal counterparts. Factors like diagnostic overshadowing, lack of standard assessment instruments, and varying clinical profile have made studies on comorbidities in IDD individuals complicated and very few research studies have been carried out in the field. This study aims to study the clinical presentation, course and outcome of psychosis and mood disorders in children and adolescents with IDD from baseline to 6 months period with assessment points at baseline, 1 month, 3 months and 6 months. The study employs standard diagnostic schedule like DBC, K-SADS, BPRS-C, CGI, DD-CGAS for diagnostic assessment, assessment of course and outcome in clinical and functional domain.

21. **Short term side effects of second generation antipsychotics in children and adolescents.** Dr. Shivanand Kattimani. Guides: Dr. Preeti Jacob, Dr. Shoba Srinath, Dr. Shekhar Seshadri, Dr. Satish Girimaji, Dr. John Vijay Sagar

It is a 12-week prospective follow-up study of children exposed second generation antipsychotics. The main objective of the study is to find out what percentage of children exposed to atypical antipsychotic show significant weight gain (≥ 7%) over a period of 12 weeks. Secondary objectives encompass examining changes in BMI, total cholesterol, LDL cholesterol, HDL cholesterol, glucose, insulin, etc. during the above specified period.

22. **School refusal behaviour in children and adolescents: Development of a brief intervention package.** Dr. Arun Singh Yadav. Guides: Dr. Shekhar Seshadri, Dr. Shoba Srinath, Dr. Satish Girimaji, Dr. John Vijay Sagar, Dr. Preeti Jacob

There is a rising magnitude of school refusal cases and its resultant short term and long term sequel. There is an immense demand of early intensive intervention that can be imparted in clinical setting by trained personals in child mental health. Since, there is lack of structured intervention module for school especially in Indian setting, this study is an attempt to bridge the gap between the various prevailing modality of treatments of school refusal in western world with the aim of preparing brief yet effective intervention tool, applicable in Indian context.

23. **Ten-year retrospective chart review of the use of depot antipsychotic medication in children & adolescents from a tertiary care centre.** Dr Siddhesh Shere. Guides: Dr. Shoba Srinath, Dr. Preeti Jacob, Dr. Satish C Girimaji, Dr. Shekar Seshadri, Dr. John Vijay Sagar

Antipsychotic medicines are the cornerstone pharmacotherapy for patients with psychotic disorders. Early and continuous management of psychoses improves the quality of life, decreases hospitalization and reduces medical costs. In clinical practice, the effectiveness of maintenance antipsychotic medication in reducing the risk of relapse in schizophrenia is often reduced by nonadherence. Observational studies generally report longer continuation rates or reduced re-hospitalization rates for patients treated with depot antipsychotics compared with those treated with oral antipsychotics. Most data regarding depot antipsychotics are from studies in the adult population. There is little data from India/LAMIC country regarding the use of depot in children and adolescents.

### Clinical Psychology

1. **Psychological assessment of Bangalore Metro Rail Corporation Limited (BMRCL) train operators.** Investigators: Dr. Nitin Anand, Dr. Manoj Kumar Sharma, Dr. Shantala Hegde, Dr. Keshav Kumar (Funding by BMRCL)

The objective of the project was to carry out psychological assessment of Bangalore Metro Rail Corporation Limited (BMRCL) train operators on psychological capabilities which are considered integral in ensuring safety of self and others during performance of work roles. A total of 289 BMRCL train operators underwent the psychological examination which included assessment of cognitive, behavioral and personality attributes of the train personnel and train drivers. The project, which was initiated in March 2016, was completed by December 2016.

2. **Development, implementation and evaluation of a training program in mental health care for Central Reserve Police Force (CRPF) personnel.** Investigators: Dr. LN Suman, Dr. Seema Mehrotra, Dr. M Manjula, Dr. Sailaxmi Gandhi, Dr. K Arun (Funding by DHR/ICMR)

The primary objective of the project is to develop, implement and evaluate a training program in mental health care for commandants, doctors and nurses serving in the CRPF. The project also aims to design a system for monitoring, evaluating and maintaining quality of the training by the trainers. The project is multi-phased and cross-sectional in design. The sample will consist of about 400 CRPF personnel and about 22 master trainers. Two phases of the study have been completed.

3. **Youth volunteerism for mental health.** Investigators: Dr. Seema Mehrotra, Dr. Manoj Kumar Sharma, Dr. Jyotsna Agrawal, Dr. Girish, Dr. Jagadisha, Dr. Deepak (Rajiv Gandhi National Institute of Youth Development)

The project proposes to explore felt needs and perspectives of youth and mental health professionals and agencies (stakeholders) regarding the scope and manner of utilization of youth volunteers in the field of mental health. Based on a series of focus group discussions, interviews
and surveys, a structured training program with extended support to carry out activities will be designed for youth volunteering for mental health. This program will be pilot tested in a sample of volunteers to document receptivity, feasibility and short term outcomes on the volunteers and the recipients.

4. Development and pilot testing of an internet based wellbeing assessment tool: An exploratory study. Investigators: Dr. Seema Mehrotra, Dr. Jyotsna Agrawal (Funding by ICSSR)

This project aims to develop a web-based system for individuals in the community to check and monitor various aspects of their well-being and general psychological distress and obtain feedback on the same. The initial phase is in progress for arriving at normative data on specific well-being tools that would be used in the main study. The main phase assessment and feedback system will be launched through echargementhealth.nimhans.ac.in website.

5. Achieving and maintaining excellence in sports: A positive psychological perspective. Investigators: Dr. Seema Mehrotra, Dr. Paulomi M Sudhir, Dr. Manoj Sharma, Dr. Manjula M (Funding by the Dept. of Youth Empowerment and Sports, Govt. of Karnataka)

The project involves understanding felt needs of youth in competitive sports and coaches for psychological training to enhance performance and maintain well-being. In addition, it aims at documenting their psychosocial concerns and perspectives in order to develop a promotive group intervention module for enabling excellence and mental health. The extension period is being utilized to develop the promotive intervention package that can be utilized by coaches and mentors.

6. Strengthening the pyramid of mental health care in India: Development and pilot testing of a self-care intervention for depression. Investigators: Dr. Seema Mehrotra, Dr. Paulomi M Sudhir, Dr. Jagadisha Thirthalli, Dr. Girish N Rao (Funding by ICMR)

The project involves development of a self-care intervention e-module for those dealing with mild levels of depression. This self-care interactive module is hosted on a web based platform and it also has an android version available on Google play store. It entails telephonic assistance and mobile prompts apart from self-help. This program called PUSH-D (Practice and Use Self Help for Depression) is currently undergoing pilot testing to examine feasibility, receptivity and short term outcomes. The preliminary observations on patterns of registrations and usage as well as feedback are encouraging.

7. A study of cognitive functions and biochemical correlates in traumatic brain injury. Investigators: Dr. Jamuna Rajeswaran, Dr. Rita Christopher (Funding by DBT)

Traumatic brain injury (TBI) is a complex injury with a broad spectrum of symptoms and disabilities. The impact on a person and his or her family can be devastating. Cognitive difficulties are very common in people with TBI. Studies have shown neuropsychological rehabilitation to be usefulness in improving the cognitive functions and day-to-day functioning. Neurofeedback training is an operant conditioning procedure whereby an individual modifies the amplitude, frequency or coherence of the electrical activity of his/her own brain. The aim of the present study is to examine the biochemical correlates pre, post neurofeedback training (NFT) in patients with TBI. Sixty patients diagnosed with TBI according to ICD-10 (WHO, 1992) will be recruited to one of the two groups within a month of injury into intervention group (neurofeedback training) and treatment as usual. The serum levels of the above will be compared before and after NFT in both groups to elucidate the biochemical mechanisms which may a possible role in the recovery. The study will be helpful in administering the NFT in the early stages of TBI, indicating that along with neural plasticity NFT augments improvement cognition and QOL.

8. Comparative study of cognitive retraining and EEG neurofeedback training in TBI- Clinical, cognitive, EEG, biochemical, functional and cerebral blood flow correlates. Investigators: Dr. Jamuna Rajeswaran, Dr. Dhaval Shukla, Dr. Sarada Subramanian (Funding by DST- CSIR)

Traumatic brain injury (TBI) often results in cognitive impairment. The underlying pathophysiology of this impairment is uncertain. Neuroimaging studies have shown that TBI results in abnormalities of functional connectivity within key cognitive networks. These changes are correlated with cognitive performance. Neuropsychological rehabilitation in form of neuro feedback based cognitive retraining results in significant improvement in cognitive functions resulting in better functional outcome. The investigators hypothesize that the improvement in cognitive function will result in improvement in structural and reorganization of cognitive networks demonstrated by functional magnetic resonance imaging (fMRI). Patients of moderate and severe TBI with imaging evidence of isolated diffuse axonal injury will be recruited for the study. These patients will undergo baseline neuropsychological assessment with structural and fMRI at 6 months. After initial assessment the patients will undergo cognitive retraining comprising 20 sessions, spanning over 40 days. Repeat neuropsychological assessment and MRI will be done immediately and after 6 months of completion of retraining.

9. Cognitive Behaviour Therapy for partial responders with OCD. Investigators: Dr. Paulomi M Sudhir, Dr. YC Janardhan Reddy, Dr. Suresh Bada Math, Dr. K Thennarasu (Funding by ICMR)

The study is aimed at examining the efficacy of CBT for partial responders with OCD. The sample consists of 100 adult patients with
OCD who are partial responders to one trial of SSRI. Participants consenting will be randomized to either CBT with pill placebo or Augmentation with Risperidon and stress management.

Ratings at baseline, post and three-month follow-up are being carried out on symptom ratings, mood, and quality of life. It is proposed that at least 20-25 sessions, over 2-3 months period will be delivered. Data collection is in progress.

10. Parenting styles, perfectionism and self-conscious emotions in young adults: a socio cultural perspective. Investigators: Dr. Paulomi M Sudhir, Dr. Seema Mehrotra, Dr. DK Subba Krishna, Dr. Mariamma P (Funding by ICSSR)

The study aimed at understanding parenting styles and perfectionism as contributors to self-conscious emotions such as shame and guilt. The study was carried out on young adults aged between 18-25 using both paper-pencil and interview methods. The sample for the paper-pencil assessment encompassed 300 young adults from various colleges. Interviews were conducted on a subsample and it was revealed that these emotions were more distinct with regard to kind of tasks across genders. Results indicated that maternal control and paternal over protection were significant predictors of self-conscious emotions.

11. Computer assisted retraining programme to improve cognitive functions for elderly. Investigator: Dr. Keshav Kumar (Funding by DST)

Normal aging is associated with cognitive decline in the domains of memory, speed of processing and executive function. Mild cognitive Impairments (MCI) is known to be a transition stage between normal aging and dementia. 10 to 15% of individuals with MCI will develop dementia placing a demand on caregivers and medical treatment. Specifically designed cognitive training programmes are known to reduce the risk of rapid cognitive decline in healthy normal elderly, individuals with MCI and dementia. Improvement in cognitive function improves the quality of life; possibly delay dementia and decreases dependence. The phase I of the study indicated improvement in cognitive functions in the domains of attention, working memory, verbal and visual learning and memory in both healthy normals as well as clinical population (MCI and mild dementia patients). The findings from phase I suggest that cognitive retraining programme is promising in improving cognitive function in healthy normals as well as clinical population including MCI and mild Alzheimer’s disease. Phase II of the study aims at computerising the cognitive retraining programs loaded on a touch screen tablet for a randomised study in healthy normal population with cognitive decline as well as patients with MCI and mild dementia.

12. Cell tower project: Psychosocial implications. Investigators: Dr. Manoj Kumar Sharma, Dr. Vivek Benegal, Dr. Pratima Murthy, Dr. Girish N Rao, Dr. BN Roopesh, Dr. K Thennarasu (Funding by SERB, DST)

A total of 1659 subjects (375 in the Age group of 18-25 years; 308 in the age group of 26-30 years; 224 in the age group of 31-35 years; 185 in the age group of 36-40 years; 343 in the age groups of 41-45 years and 224 in the age groups above 46 years) have been assessed using door-to-door survey methodology. Attempts were made to include equal number of male/female members and school/college going children/teenagers on the week end. At least three attempts were made to include the subjects before considering them drop-out. They were administered sociodemographic data sheet, NIMHANS psychiatric morbidity screening instrument, mobile phone problem use scale, depression, anxiety, stress scale, irritability questionnaire, WHO well-being index and cognitive (attention and concentration - digit span, forward and backward), triads test, letter/number cancellation; memory - sentence repetition and logical memory; executive functions test- Controlled Oral Word Association Test and category fluency, n-back (verbal) Complex Figure Test

13. Pattern and management of technology addiction among youth. Investigators: Dr. Manoj Kumar Sharma, Dr. LN Suman, Dr. MP Sharma, Dr. Nitin Anand, Dr. P Marimuthu (Funding by Rajiv Gandhi Institute of Youth Development, Chennai)

The present work aims to explore the pattern of technology addiction and its impact among youth. Based on the feedback of users as well as of experts, intervention module will be developed to enhance the motivation of users for healthy use of technology.

14. Family relationships, marriage related beliefs and expectations and its association with mental health in New Indian Middle Class: A transgenerational approach. Investigators: Dr. M Manjula, Dr. Pradeep BS, Dr. Mariamma Philip (Funding by ICSSR)

The study aims at understanding the gamut of family relationships, interactions, marital relationships, beliefs and attitudes about marriage, the nature of changes in this context over the time, across the different age groups. A population based cross sectional mixed methods study design would be adopted. The study sample would be drawn from Bengaluru and Kolar, urban, semi-urban and rural areas adopting a representative stratified clustered random sampling technique with stratification based on urban and rural families. The approximate sample size would be around 3600.

The progress made so far include: (i) Finalizing the semi-structured interview by carrying out brain storming sessions with experts (ii) Pilot phase: training of project staff and familiarizing with data collection and analysis (iii) Collection of data from urban and rural samples of two districts for the main study.
15. Mental health literacy on youth depression and suicides for teachers: Impact on knowledge, attitudes, facilitating support and help seeking. Investigators: Dr. M Manjula, Dr. Roopesh BN, Dr. Binukumar (Funding by ICSSR)

The objectives of the study are to assess the impact of the mental health literacy program on student depression and suicidal behaviours on teachers' knowledge, attitudes and facilitating support and help-seeking. Sample included 100 teachers teaching in high schools (8th-12th standard) at private and government institutions in Bengaluru. Stratified sampling with pre-post assessment single group design with a follow-up after three months was adopted.

The progress made so far is as follows: Development of questionnaires for assessing, knowledge, and attitudes; feedback form; validation and pilot testing of the tools and developing the components of the orientation program. The main study included carrying out assessment and orientation program, in group format consisting of 6-10 teachers. Data collection is completed and the data analysis and writing up of the project report is in progress.

16. Neural effects of cognitive remediation in schizophrenia: An ERP and fMRI study. Investigators: Dr. Devvarta Kumar, Dr. BN Gangadhar, Dr. Ganeshan Venkat Subramanian, Dr. Shivaram Varambally, Dr. Rose D (Funding by DBT)

This study aims to examine the neural effects of cognitive retraining (specifically home-based training) in patients with schizophrenia. The schizophrenia patients are being placed in one of the three groups – home-based remediation group, clinic-based remediation group and the wait-list control group. Pre- and post-neuropsychological and neurophysiological (fMRI and EEG-based ERP) changes are assessed to determine the effects of remediation.

17. Determining sensitivity and specificity of Event Related Potentials for its use as cognitive function biomarker in Schizophrenia. Investigators: Dr. Devvarta Kumar, Dr. Shivaram Varambally (Funding by Department of Biotechnology)

This study is intended to see the sensitivity and specificity of various EEG-based Event Related Potentials (ERP) in schizophrenia. The ERP paradigms have been developed and data collection is in progress.

18. Developmental progression of executive functioning, adaptive behaviour and pre-academic skills in preschool children with ADHD. Investigators: Dr. M Thomas Kishore, Dr. Preeti Jacob, Dr. B Roopesh, Dr. Nithya Poornima, Dr. SS Meera, Dr. B Binukumar (Funding by NIMHANS)

19. Developmental outcomes of children born to mothers with mental illnesses during pregnancy and postpartum period: A longitudinal study in a Perinatal Psychiatry Clinic. Investigators: Dr. M Thomas Kishore, Dr. Geeta Desai, Dr. T Harish, Dr. B Binukumar (Funding by ICMR)

20. Effectiveness of a mental health intervention in protecting oneself against gender based violence and enhancing resilience in young adult women. Investigators: Dr. Veena Satyanarayana, Dr. Prabha S Chandra (Funding by DHR-ICMR)

The aim of the present study is to examine the effectiveness of a peer delivered group mental health intervention in protecting oneself against GBV and enhancing resilience in young adult women from socio economically disadvantaged backgrounds in Bengaluru. The effectiveness of a peer delivered group mental health intervention on: (i) Endorsing equitable gender norms (ii) Increased perceived self-efficacy in protecting oneself against GBV (iii) Increased resilience (iv) Reduced symptoms of depression, anxiety and stress (v) Increased gender and mental health literacy. A group randomized trial will be conducted using a mixed methods (qualitative and quantitative) design. The formative phase (Phase I) has been completed. Data obtained through focus group discussion from 30 participants has been analyzed. The intervention programme has been developed and is ready to be tested for its effectiveness.

21. Development and evaluation of a brief psychoeducational-interventional training video on depression for Accredited Social Health Activists (ASHA). Investigators: Dr. Aruna Rose Mary Kapanee, Dr. KS Meena, Dr. Paulomi Sudhir, Dr. Prasanthi Nattala, Dr. N Manjunatha

The aim of this study is to develop and evaluate the effectiveness of a brief psychoeducational-interventional training video on depression for ASHAs. The study involves a pretest-posttest (one-group) design. Based on inputs from focus group discussions with the ASHAs, the video is currently under development. The video involves inputs to the ASHAs regarding the nature, causes, and impact of depression, followed by interventional components with regard to motivating the individuals to engage in positive health behaviors and problem solving. All the ASHAs will be followed up a month after the intervention, to assess their knowledge regarding depression and attitude towards individuals with depressive disorders.

22. Exploration of pattern of internet use, psychological attributes and promotion of healthy use of technology. Investigators: Dr. Nitin Anand, Dr. Manoj Kumar Sharma, Dr. Gitanjali Narayanan, Dr. Anish V Cherian, Dr. Mariamma Philip, (Funding by ICSSR)
The project aims to estimate the scale and impact of internet addiction in the community population. Focus would be on capturing the socio-demographic variables, lifestyle variables, psychological attributes from a community sample which are associated with internet addiction. In the background of this collected information, screening and a brief intervention treatment model for promotion of healthy use of technology will be developed and delivered in the community population comprising adolescents and young adults.

Students:

23. Efficacy of mindfulness integrated cognitive therapy in patients with OCD. Ms. Sonal Mathur. Guides: Dr. Mahendra P Sharma, Dr. YC Janardhan Reddy (NIMHANS Fellowship)

The aim of the study is to evaluate the efficacy of Mindfulness Integrated Cognitive Therapy (MICT) in the treatment of OCD. Sixty patients with OCD, randomly allocated to MICT group or Stress Management Training (SMT), underwent 12 sessions of therapy. Data was collected on measures of OCD, anxiety, depression, quality of life, mindfulness, quality of life and illness severity. Results indicate that though both MICT and SMT groups have shown improvement from baseline to subsequent follow-up points, MICT group has shown significantly higher improvement than SMT group on severity of OCD and the strength of obsessive beliefs at post-intervention (p<0.001). The percentage of treatment responders at all assessments points was higher in MICT group, compared to SMT group. Findings have important implications for further research, training and clinical practice.

24. Effectiveness of acceptance and commitment therapy in patients with somatic symptom disorder. Ms. Fatema Khanam. Guides: Dr. Mahendra P Sharma, Dr. SK Chaturvedi

The aim of the study is to examine the effectiveness of Acceptance and Commitment Therapy (ACT) on somatic symptoms, anxiety and depression, global functioning, psychological well-being and improving acceptance, mindfulness and valued-living in patients with somatic symptom disorder. A two-group design with baseline, post and follow-up assessments will be adopted. Forty patients with primary diagnosis of somatic symptom disorder will be randomly assigned to either ACT intervention group or treatment-as-usual group and ACT group will have 8-10 sessions of intervention. Appropriate statistical measures will be used to assess the improvement and compare the two groups.

25. Cognitions, metacognitions, neuropsychological functioning and symptom dimensionalities in obsessive compulsive disorder. Ms. Manpreet Kaur. Guides: Dr. Mahendra P Sharma, Dr. Keshav Kumar, Dr. YC Janardhan Reddy

Obsessive Compulsive Disorder (OCD) is a heterogeneous condition. Recent research shows one such method used to reduce this heterogeneity is to examine symptom dimensions in OCD. It has been shown that symptom dimensions have distinct but overlapping brain substrates. There are also some early indications that symptom dimensions might have distinct neuropsychological correlates. However, it is unknown that whether symptom dimensions in OCD are associated with specific dysfunctional beliefs and metacognitions. Hence, the present study aims to examine obsessive beliefs and metacognitions in OCD symptom dimensions and their relationship with neuropsychological functions.

26. Development and preliminary evaluation of mindfulness integrated cognitive behavioural intervention for professional care providers at cancer palliative care centres. Ms. Amanpreet Kaur. Guides: Dr. Mahendra P Sharma, Dr. SK Chaturvedi (Funding by UGC-JRF)

The aim of the study is to explore felt needs, professional quality of life and well-being and examine the effects of Mindfulness Integrated Cognitive Behavioural Intervention (MICBI) for professional care providers at cancer palliative care centres. A mixed-methods cross-sectional approach will be adopted in the first phase with a sample of 50 participants. Based on the felt needs obtained from the qualitative data, contents of MICBI program will be formulated. In the second phase a single group study design will be adopted with pre-, post- and three-month follow-up assessment with a sub-sample of 25 participants.

27. Efficacy of mindfulness integrated cognitive therapy in comparison with cognitive behaviour therapy in patients with predominantly obsessions: A randomized control trial. Ms. Amrita Biswas. Guides: Dr. Mahendra P Sharma, Dr. YC Janardhan Reddy

The aim of the study is to examine the efficacy of Mindfulness Integrated Cognitive Therapy (MICT) in comparison with Cognitive Behavior Therapy (CBT) in patients with predominantly obsessions. The primary objectives are to examine the efficacy of MICT and CBT in reducing symptom severity and their effects on quality of life in patients with predominantly obsessions. The secondary objectives are to examine the effects of MICT and CBT on reducing anxiety and depression, on obsessive beliefs, mindfulness skills and psychological flexibility, and on socio-occupational functioning. A two group randomized controlled design with baseline, post therapy and three months follow-up assessment will be adopted. A sample of 70 patients with diagnosis of OCD - predominantly obsessions will be recruited. Patients will be randomly assigned to either MICT (35 patients) or CBT (35 patients) group based on computer generated random table. The study will be done under pilot and main phase.

28. Effects of mindfulness-based cognitive therapy on psychological and neuropsychological measures in patients...
28. Integrative systemic therapy for families of youth with mental disorders. Ms. Suvarna Joshi. Guides: Dr. Ahalya Raguram, Dr. Mathew Varghese

Family therapy attempts to understand human behavior as shaped by its context. Family functioning has significant implications for the development and well-being of individual members and includes the individual, marital and the overall family levels. However, the relative contributions of individual or dyadic factors to overall family functioning are not clear and have not been examined in clinical samples. This study aims to examine the impact of systemic family therapy in families of youth with mental disorders on wellbeing, emotional adjustment, dyadic adjustment and overall family satisfaction and identify predictors of the same. Data has been analyzed and the results are being collated.

32. Development of a scale to assess experiences in children and adolescents. Ms. Snigdhasree Bhattacharyya. Guides: Dr. Uma Hirisave, Dr. N Janardhana (NIMHANS Intramural Funding)

The aim of the study was to develop a scale to assess experiences in children and adolescents. The study explored how children and adolescents conceptualize experiences in their day to day life and various experiences in children and adolescents. Following which a scale was developed to assess experiences in children and adolescents and psychometric properties of the scale was established. The sample included school-going students between 8-16 years of age from English/Kannada medium of instruction. Qualitative and quantitative methods were used for the analysis of data. The study will contribute in understanding the construct of experience from the child’s perspective.

34. Psychological adjustment in children and adolescents following parental loss due to road traffic accident. Ms. Anupama Vijayaraghavan. Guides: Dr. Uma Hirisave, Dr. Indira Devi (NIMHANS Intramural Funding)

The aim of the study is to explore psychological adjustment in children and adolescents who undergo parental loss due to road traffic accident. The study will explore functioning in children and adolescents across...
35. **Outpatient group intervention for adolescents with emotional problems: Feasibility and effect.** Ms. Preethi Anne Ninan. Guides: Dr. Uma Hirisave, Dr. SC Girimaji (Funding by UGC)

The aim of the study is to explore the feasibility and effect of group intervention for adolescents with emotional problems in an outpatient setting. The study will explore feasibility, effect in terms of reduction in symptoms of anxiety and/or depression and improvement in overall levels of functioning, in addition to examining the processes of group intervention sessions and changes in parents’ knowledge about the nature of the adolescent’s emotional problems. A single-group pre-post design will be employed for the study, with 3 points of assessment: pre-intervention, post-intervention and follow-up assessment. The study will involve a minimum of 5 groups of adolescents aged 12-17 years, in groups of 4-8 boys/girls. Measures to assess aspects of feasibility, as well as assessments to assess anxiety, depression and functioning, will be used. The data will be analysed using both qualitative and quantitative methods of analysis.

This study could point the way towards future clinical services with regard to utilising groups as means of intervention with adolescents.

36. **Sleep disturbances, anxiety and behavioral problems in children and adolescents with autism spectrum disorder.** Mr. Gowtham A. Guides: Dr. Uma Hirisave, Dr. John Vijay Sagar (Funding by ICMR)

This study assessed parent reported sleep disturbances in children and adolescents with Autism Spectrum Disorder (ASD) and compared it with typically developing children and adolescents. Participants included 30 parents of children and adolescents diagnosed with ASD attending IP/OP services at NIMHANS, Bengaluru and 30 parents of typically developing children and adolescents attending regular schools in and around Bengaluru, India. Findings suggested that children with ASD had more sleep disturbances in terms of bedtime resistance, sleep anxiety and overall sleep disturbances. Also, higher the severity of autism and adaptive function deficits, higher the sleep disturbances.

37. **Experiences, appraisal and resiliencies in children and adolescents with psychiatric disorders.** Ms. Ratnesh C. Guide: Dr. Uma Hirisave (Funding by UGC)

The aim of the study is to explore positive and negative experiences, their appraisals and resiliencies in children and adolescents with psychiatric disorders. The sample comprises 80 children and adolescents in the age group of 8-16 years. Data collection of the main phase has been completed and analysis is in progress.

38. **Group intervention for children with learning difficulties.** Ms. Moulya. Guide: Dr. Uma Hirisave (NIMHANS Intramural Funding)

The aim of the study is to examine the effect of group based intervention for children with learning difficulties in the age group of 5-9 years. The sample will consist of 20 children divided into 3-4 groups. They will receive intervention for phonological and pre-academic skills in 15-20 sessions over a period of 2-3 months. Pre and post-intervention assessments will be carried out.

39. **Differentiation of self, attachment and marital quality in married persons.** Ms. Madhurini Vallikad. Guide: Dr. Anisha Shah (NIMHANS Intramural Funding)

The aim of the study was to examine differentiation of self, attachment and marital quality in married persons. Tools used were Beck’s Depressions Inventory, Marital Quality Scale, Differentiation of Self Inventory, and Attachment Style Questionnaire, Analysis of data collected from a clinical sample of 105 married persons shows that differentiation of self is associated with secure attachment and emotional reactivity is linked with insecure attachment. In those with marital distress, higher emotional cut-off is associated with higher avoidance attachment and lower overall marital quality.

40. **An exploratory study on gender, migration and mental health in persons from the Khasi community.** Ms. Ila Lyngksi Rynjah. Guide: Dr. Anisha Shah (Funding by ICMR)

The aim of the study was to examine the experience of migration and mental health of persons from the Khasi community. A structured interview, the Bem’s Sex Role Inventory, the Psychological Well-Being Scale, Coping Checklist, Depression-Anxiety Scale-21, the Revised Multi-Phasic Questionnaire, a semi-structured interview, as well as a three-generation genogram were used. Quantitative measures were used with 148 participants and the interview and the genogram were used with a subgroup of 30. Results show that there is gender difference in migration experience but no gender difference on mental health variables.

41. **Client experiences in combined couples therapy.** Ms. Ashmeet Nagpal. Guides: Dr. Anisha Shah, Dr. Veena Satyanarayana (NIMHANS Intramural Funding)

The study used a mixed-method design with 40 married individuals to explore client experiences of helpful and unhelpful aspects, change...
moments/processes, therapy techniques, goals, themes, therapeutic alliance, and satisfaction in individual and conjoint sessions in combined couples’ therapy. Psychopathology, marital quality and differentiation were also examined. Results show that conjoint sessions show change in interpersonal behavior and individual sessions change affect. Change related to increased awareness about systemic formulation of the problem and self-in-relationship was common to conjoint as well as individual sessions. Therapeutic alliance as well as techniques is critical for therapeutic change.

42. Depression, relationship attributions and automatic thoughts in married individuals. Mr. Kiran Kumar CT L. Guides: Dr. Anisha Shah, Dr. Nitin Anand (NIMHANS Intramural Funding)

The aim of the study was to understand the association between depression, relationship attribution and automatic thoughts among married individuals. Beck’s Depression Inventory, Automatic Thoughts Questionnaire, Marital Attitude Survey, and Relationship Attribution Measure were used with 40 individuals having mild/moderate depression. Results showed that depression is associated with automatic thoughts but not with relationship attribution.

43. Client reports of themes and goals in combined couples therapy. Ms. Paveine Paulina Y. Guides: Dr. Anisha Shah, Dr. Veena Satyanarayana (NIMHANS Intramural Funding/Grant)

The study aims to understand themes and goals of sessions based on client reports of sessions in combined couples therapy. Eighty married individuals in ongoing or completed couples therapy in the age range of 20 to 60 years will be requested to participate in a structured interview that will be designed to elicit their reports of themes and goals in individual sessions and in conjoint sessions. Literature review and preparation for the pilot phase is in progress.

44. Life adversities, relational experiences and Self-esteem in women with alcohol use disorders. Ms. Kanika Malik. Guides: Dr. LN Suman, Dr. Prabhat K Chand, Dr. P Marimuthu (NIMHANS Fellowship)

The aim of the study was to examine the clinical profile of women with alcohol use disorders (wAUDs) as well as adverse life experiences, relational factors, self-esteem and perceived social support among them. The sample consisted of 35 women with alcohol use disorder and 60 women without psychoactive substance use drawn from the community. Results revealed that 57.14% of wAUDs met criteria for Axis I disorders and 17% met criteria for Axis II disorders. wAUDs were exposed to a significantly higher number of traumatic events and life adversities, both in childhood and adulthood. They had significantly lower self-esteem than participants in the comparison group. They however had secure attachment with their parents and supportive social networks. The findings will contribute to better understanding of the treatment needs of this clinical population.

45. Effects of cognitive behaviour therapy among women with substance use disorders. Ms. Hargun Ahluwalia. Guides: Dr. LN Suman, Dr. Prabhat K Chand (NIMHANS Fellowship)

The aim of the study is to examine the effects of cognitive behavior therapy among women with substance use disorders. The objectives are to examine the effects of CBT in reducing severity of substance dependence, enhancing self-esteem and coping self-efficacy and improving distress tolerance, emotion regulation and quality of life. The sample will consist of 30 women with a diagnosis of substance use disorder in the age range of 18 to 50 years. A CBT framework will be used to plan 12-15 sessions of psychotherapy and pre-post intervention assessments will be used to examine the effectiveness of the intervention. Follow-up assessment one month after completion of the treatment has also been envisaged.

46. Development and implementation of family based therapy among young men with substance use disorders. Ms. Tanya Anand. Guides: Dr. LN Suman, Dr. Arun K (Funding by UGC-JRF)

The aim of the study is to develop a Family Based Therapy (FBT) program and examine its effect on young men with substance use disorders and their parents. The objectives are to examine the effects of FBT in reducing severity of substance abuse, improving relationships with parents and enhancing quality of life. The sample will consist of 30 young men (Age range=18-25 years) with substance use disorder, along with one parent. The study will have a pre-and post-study design conducted over 4 points in time: pre-therapy assessment, post-therapy assessment, 1 month follow-up assessment, and 3 months’ follow-up assessment.

47. Perceptions of self, recovery and future among men with early onset substance use disorders. Ms. Tanya Anand. Guides: Dr. LN Suman, Dr. Arun K (Funding by UGC-JRF)

The aim of the study is to examine self-stigma, self-regulation, self-efficacy as well as perceptions of recovery and future among men with early onset substance use disorders. The sample consisted of 40 patients divided into two groups: 20 men with Alcohol Use Disorders (AUD) and 20 men with Drug Use Disorders (DUD). Quantitative measures as well as a semi-structured interview schedule were used to collect data. Results revealed that men with AUD had higher self-stigma. Generalized expectancy of success was significantly correlated with confidence in recovery. Substance availability, peer influence, parental discord and stress were perceived as barriers to recovery.

48. Betrayal trauma and dissociative experiences among women in a reception center. Ms. Chaitra Kumble. Guide: Dr. LN Suman (NIMHANS Intramural Funding)
The aim of the study is to examine betrayal trauma, post trauma cognitions and dissociative experiences among women in a reception centre in Bangalore. The sample consisted of 30 women with a mean age of 25.47 years. Quantitative measures as well as a semi-structured interview schedule were used to collect data. Brief supportive sessions were provided to all the participants to reduce emotional distress. The data is being analyzed and the results will be useful in planning appropriate psychological interventions and approaches for reintegration of the women into the community.

49. Intimate partner violence: Trauma coping self-efficacy, resilience and hopefulness among women in a short stay shelter home. Ms. Shilpa KS. Guide: Dr. LN Suman (NIMHANS Intramural Funding)

The aim of the study is to examine the nature of intimate partner violence experienced by women in a short stay shelter home. The study also aims to examine trauma specific coping self-efficacy, resilience and hopefulness among the women. The sample will consist of 30 women staying in a short stay shelter home in Bengaluru. Quantitative measures as well as a semi-structured interview schedule will be used to collect data. The findings from the study will be useful in planning appropriate psychological interventions for women in shelter homes.

50. Affective events, affective experiences at workplace and their correlates. Ms. Janhavi Devdutt. Guides: Dr. Seema Mehrotra, Dr. Paulomi Sudhir (UGC Fellowship)

The study is based on the interface between the field of workplace mental health and the literature on affect regulation. The aim of the study is to examine affective events and affect regulation at work along with trait affect and relationship quality at work as predictors of workplace outcomes such as work engagement and affective well-being at work as well as overall psychological wellbeing. The study uses a mixed method design and affect regulation processes at work will be examined in the last phase of the study. Affect regulation survey has been developed and pilot tested. The main phase of the study has been initiated.

51. Development and preliminary evaluation of a positive youth development programme for college youth. Ms. Noufal TH. Guides: Dr. Seema Mehrotra, Dr. Pratima Murthy (UGC Fellowship)

The research aims to examine felt needs of stakeholders and develop a positive youth development program for college youth for promotion of mental health. A pilot testing of the program will also be carried out. The first phase of the study involving focus group discussions with youth and one to one interviews with administrators has been completed by drawing date from 20 local campuses. A knowledge attitude and practice survey has been developed and pilot tested. PYD program content is being developed based on the initial findings and field observations.

52. Psychological recovery and its correlates in consumers of mental health services. Ms. Aditi G. Guides: Dr. Seema Mehrotra, Dr. Srikala Bharath (NIMHANS Intramural Funding)

The study examined multiple indices of recovery (symptomatic, functional and psychological recovery) in a heterogeneous sample of outpatients. It also documented the association of recovery indices with selected socio-demographic, illness and treatment variables and with social support. Nearly 40 percent of the sampled participants were at the lower stages of psychological recovery, despite a majority of them were rated by clinicians as having mild severity of symptoms. The participants with common mental illness were significantly lower on self-reported improvement and higher on moratorium subscale of psychological recovery, indicating their struggle in dealing with a sense of loss and despair.

53. Mentoring relations and well-being in Indian youth: An exploratory study. Ms. Priya Singh. Guide: Dr. Seema Mehrotra (NIMHANS Intramural Funding)

The specific objectives of the study were to explore prevalence and nature of mentoring relationships along with felt needs and related expectations from a mentor. The study also attempted to examine the relationship of presence of mentoring and quality of relationship with indices of well-being and positive youth development. A total of 182 community participants (17 to 30 years) were sampled. A majority reported a strong felt need for the mentor. Compared to their non-mentored counterparts, currently-mentored participants reported higher levels of well-being and positive youth development indicators. Satisfaction with one’s current mentor was positively correlated with multiple indices of well-being.

54. Help-seeking for psychological distress and its correlates in college going youth. Ms. Fathima MA. Guides: Dr. Seema Mehrotra, Dr. Paulomi M Sudhir (NIMHANS Intramural Funding)

The study aimed at examining inclination to seek help from formal and informal sources for depression and perceived barriers to help-seeking in college youth. It also examines correlations of help seeking inclinations with mental health literacy, perceived peer-norms, self-efficacy and psychological distress. Preliminary findings in a sample of 300 youth highlight that a sizable proportion of youth (37%-45%) experience low inclination to seek help from mental health professionals for depression. Depressive symptoms in the context of a life event are associated with a lower likelihood of seeking help than those without preceding life events. Further analyses are in progress.

55. Self-care and its correlates in adults seeking outpatient psychiatric services. Mr. Vimal Kumar. Guides: Dr. Seema Mehrotra, Dr. Paulomi M Sudhir (NIMHANS Intramural Funding)
Engagement in self-care can play an important role in the management of long term health conditions and facilitating fullest possible recovery. There is a dearth of studies in the Indian context on the extent of engagement in self-care behaviors for dealing with mental health problems in those seeking mental health services. The study is aimed to examine the nature of self-care practices in a sample of individuals seeking psychiatric outpatient services, the relationship between engagement in self-care and socio-demographic, and illness variables as well as recovery indices. Perceived barriers and facilitators of engagement in self-care will also be explored.

56. Efficacy of Metacognitive therapy in patients with social anxiety disorder. Ms. Lakshmi J. Guides: Dr. Paulomi M Sudhir, Dr. Mahendra P Sharma, Dr. Suresh Bada Math

The study examined the efficacy of Metacognitive therapy (MCT) in patients with social anxiety, comparing it with a control group that received Applied Relaxation on post event processing (PEP) and anxiety. Fifty patients were recruited from the OPD. They received 10-12 sessions of therapy and were assessed at pre-, post-sessions and three-month follow up. Results indicate that MCT and AR were both effective in improving PEP, anxiety, depression, while MCT was marginally more effective on improving metacognitions.

57. Process of change in Cognitive Behaviour Therapy (CBT) and exposure therapy for social anxiety disorder. Ms. Systla Rukmini. Guides: Dr. Paulomi M Sudhir, Dr. A Shyam Sundar

The aim of the study was to examine the role of estimated social cost, perceived social self-efficacy and perceived emotional control as mediators in Cognitive Behaviour Therapy (CBT) and Exposure Therapy (ET) in patients with Social Anxiety Disorder.

Fifty patients with diagnosis of social anxiety were randomized to either CBT or ET. Weekly assessment on mediator variables was carried out. Outcome analysis and mediational analysis to examine the changes in mediator variables across sessions of therapy were done. Analysis of data is complete; self-efficacy emerged as a mediator and homework compliance was a predictor of outcome.

58. Psychosocial and clinical correlates of suicidal behaviour in persons with bipolar affective disorder, currently euthymic. Ms. Vaisnvy NM. Guides: Dr. Paulomi M Sudhir, Dr. Muralidharan K

The study is aimed at examining the clinical and psychosocial correlates of suicidal behaviour in patients who are diagnosed with bipolar disorder, currently euthymic. The sample includes 240 patients with BPD, screened for their euthymic status and assessed on various measures such as cognitive flexibility, internalized stigma, and hopelessness as well as interviews with attempters. The pilot study has been completed and the main phase of data collection is in progress with 14 participants being recruited.

59. Psychosocial correlates of body image perception and psychological functioning in young adults. Ms. Athulya Jayakumar. Guides: Dr. Paulomi M Sudhir, Dr. Prabha S Chandra

The study is aimed at examining body image perception and its psychosocial correlates namely perfectionism, teasing experiences, media and peer influences, interpersonal sensitivity and coping behaviours. Psychological distress and self-esteem are also being examined. The sample includes 300 young adults drawn from the community, using a stratified random sampling. The pilot study has been completed along with a try out on 30 community participants. The findings have been incorporated and the main study is in progress. A total of 240 participants have been recruited and interviews with 10 participants are completed.

60. Impact of family accommodation, parenting styles in pediatric OCD. Ms. Poornima C. Guides: Dr. Paulomi M Sudhir, Dr. Preeti Jacob

The study is aimed at examining family accommodation, parenting style of control, and parental psychopathology in adolescents aged 13-19 years with OCD. The study will involve assessment of both parents and adolescents on measures of parenting, parental psychopathology and neuroticism as well family accommodation with respect to OCD, and assessments of adolescents on OCD severity. The sample consists of 100 adolescents and 100 parents. The pilot phase of the study is in progress and 14 parents and adolescents have been recruited till date.

61. Social cognition in patients with social anxiety disorder. Ms. Sindhuja Sudarshan. Guides: Dr. Paulomi M Sudhir, Dr. Jagadisha Thirthalli

The study examined social cognition (SC) in patients with social anxiety disorder, compared with healthy controls. The patients were assessed on measures of social perception, theory of mind, emotion recognition and attribution biases and disability using standardized measures. Twenty six clinical participants and 27 healthy controls were recruited. Results participants with social anxiety had emotion recognition deficits difficulties in identifying social blunders on higher order ToM tasks and showed an internalizing bias for negative events when compared to the control sample. Social anxiety and disability were positively correlated. Social anxiety was positively correlated with an internalizing bias for negative events.

62. Illness perceptions and health beliefs in patients with psychiatric disorders. Ms. Sneha Goyal. Guides: Dr. Paulomi M Sudhir, Dr. Mahendra P Sharma
63. Effectiveness of an Integrated Intervention Program for Alcoholism (IIPA): To enhance executive functions, affect regulation, and quality of life. Mr. Rajesh Kumar. Guides: Dr. Keshav Kumar J, Dr. Vivek Benegal, Dr. Roopesh BN (Funding by ICMR-JRF)

The study aimed at developing an Integrated Intervention Program for Alcoholism (IIPA). IIPA included psychoeducation and 18 sessions of cognitive remediation to enhance executive functions and Qigong & Tai-Chi Chuan to enhance self-regulation/affect regulation. Qigong and Tai Chi Chuan also have health benefits. Outcome measures encompassed behavioral scale, neuropsychological test and electrophysiological measures before and after intervention. The sample consisted of 50 patients—25 patients allocated to the treatment group and 25 controls receiving treatment as usual. Results showed that IIPA is more effective than treatment as usual for persons with alcoholism.

64. Development of an intervention programme for socio-cognitive deficits in schizophrenia spectrum disorders. Ms. Dhanya C. Guides: Dr. Keshav Kumar J, Dr. Jagadisha Thirthalli (Funding by ICMR-JRF)

Socio-cognitive deficits in Schizophrenia Spectrum Disorders are well-documented in five areas: Emotion Processing, Attribution Bias, Social Perception, Social Knowledge and Theory of Mind. First line treatments like psychotropic medications and existing psychotherapeutic interventions have been unsuccessful in ameliorating these deficits across time. This study aims to develop an innovative indigenous intervention programme for social cognition—which is the need of the hour—by incorporating evidences from research in neuropsychology, cognitive rehabilitation and social affective neurosciences. Also, the programme will be evaluated for changes in social cognition, neuro-cognition, and social functioning, as an RCT (n=60) with a healthy comparative group (n=30).

65. Cognitive control training in depression: A randomised controlled study. Ms. Meenakshi Banerjee. Guides: Dr. Keshav Kumar J, Dr. Paulomi M Sudhir, Dr. Senthil Reddi (NIMHANS Fellowship)

This study attempts to develop cognitive control training (CCT) programme to improve cognitive control in patients with depression. The cognitive control improves metacognition, which play a pivotal role in maintaining depressive symptoms. Cognitive control paradigms will be adapted from previous studies from NIMHANS, while, the affect components of the training programs would be developed for the study. The sample will comprise 60 participants randomly allotted to the CCT (30) or Behaviour Activation (30), they will be assessed on clinical measures of depression, cognitive behavioural measures and on neuropsychological measures before, after and on 3-month follow up.

66. Effectiveness of cognitive retraining on neuropsychological, neuroimaging correlates and quality of Life following epilepsy surgery: A randomized control study. Ms. Jasmine Pasricha. Guides: Dr. Keshav Kumar J, Dr. Sanjib Sinha, Dr. Jitender Saini (Funding by ICMR-JRF)

Cognitive deficits are well documented in patients with epilepsy secondary to hippocampal sclerosis. Research suggests that remnant cognitive deficits do not improve with spontaneous recovery. The current study aims at developing cognitive retraining programme to improve cognition, quality of life, emotional states examining its impact on behavioural and neuroimaging outcome measures such as DTI. Proposed sample consists of 30 subjects each in intervention group and treatment as usual group, 18 to 45 years of age, post-resection surgery for Hippocampal Sclerosis, with Engel 1A outcome and healthy normal control group. It will be a RCT study with follow-up after 6 months.

67. Neuropsychological and MRI correlates of cognitive functions in Glioma. Ms. Harini G. Guides: Dr. Keshav Kumar J, Dr. Dwarkanath Srinivas, Dr. Jitender Saini

The differential contributions of neural circuits to cognition have been historically debated. Re-examining neuropsychological test performance and its correlation with MRI data in focal lesion could augment the understanding of their relationship. The current study aims to examine a sample of 60 individuals screened from NIMHANS IP/OP services, identified as having glioma in the frontal, temporal and parietal regions of the brain, in order to determine their differential contributions to neuropsychological functions as measured by classical tests for these regions. The data will be analysed using suitable statistical measures. Patterns that emerge extensively implicate on increasing effectiveness of cognitive interventions.


A total of 250 employees were assessed in group and individual administration for usages of technology. The study showed that 9.2%
participants were found to be at risk of developing internet addiction. More time is spent on using internet professionally at workplace in the IT industry. The knowledge related use is more in IT and among males. Facebook and Internet use is more in IT organizations, while mobile phone use is more in other organizations. Problematic mobile phone use also shows moderate positive correlation with Facebook intensity scale scores.

69. Emotion regulation therapy in anxiety disorders: an outcome study. Mr. Vidhya Sagar K. Guides: Dr. Manjula M, Dr. Mahendra P Sharma, Dr. Suresh BM (Funding by ICMR-JRF)

The study examined the efficacy of emotion regulation therapy in anxiety disorders in improving emotion regulation and reducing symptoms. In addition, mediating role of mindful awareness and homework compliance and also the role of moderators such as anxiety sensitivity and trait anxiety in outcome were examined. Sample consisted of 60 participants (intervention group: 30 and treatment as usual group: 30). The ERT group underwent 16 sessions of therapy. Intervention and assessments were completed in 22 ERT group and 20 individuals in TAU. ERT group showed significant improvement in symptoms and emotion regulation.

70. Cognitive styles, psychosocial and clinical determinants of functioning in patients with bipolar disorder. Ms. Mareena Susan Wesley. Guides: Dr. M Manjula, Dr. Jagadisha Thirthalli (Funding by UGC-JRF)

The study aimed to examine the cognitive styles, clinical and psychosocial determinants of functioning and subjective experiences in patients with bipolar disorder. A sample of 150 patients diagnosed with bipolar disorder, fulfilling the inclusion and exclusion criteria were selected for the quantitative study of which a sub-sample of 10 were drawn for in-depth interviews. A cross sectional, mixed method exploratory design was used. The findings of the study highlight the significance of the various clinical, psychosocial and cognitive variables that affect functioning of patients with bipolar disorder even in remission.

71. Brief cognitive behavior therapy in remitted bipolar disorder. Ms. Seema P Nambiar. Guides: Dr. M Manjula, Dr. Shyam Sundar A (Funding by ICMR-JRF)

The study is being undertaken to examine the effect of brief CBT on inter-episodic symptoms, dysfunctional cognitions, adherence to treatment, emotion regulation, functioning and quality of life in remitted bipolar disorder. A 2-group randomized control design with multiple assessments (pre, post & follow-up at 3 months) is planned. The sample would consist of 30 patients in the intervention group and 30 patients in the control group. About 8-10 individual sessions will be held over 2-3 months for the study group. Recruitment of the sample for the study has been completed. Data collection and scoring is in progress.

72. Effectiveness of emotional competence skills programme for adolescents. Ms. Lavanya TP. Guides: Dr. M Manjula, Dr. John Vijay Sagar, Dr. Mariamma Philip (NIMHANS Fellowship)

The aim of the study is to explore emotional competence and to study the effectiveness of an emotional competence skills programme for adolescents. The sample consisted of 272 high school and pre-university students in the first phase and 188 students in the second phase (study group=100 and control group=79). The study adopted a prospective design (pre, post and 3-month follow up). The focus group discussions along with exploratory data were used to finalize the content for intervention. The data collection for exploratory and intervention phase has been completed; data analysis is in progress.

73. Impact of child sexual abuse on mental health, trauma and attachment beliefs and interpersonal functioning in young adults. Ms. Radhika K. Guides: Dr. M Manjula, Dr. Jaisoorya, Dr. Binu Kumar (Funding by UGC-JRF)

The aim of the study is to understand the impact of child sexual abuse on mental health, trauma and attachment beliefs, interpersonal functioning in young adults. Phase I would adopt an exploratory cross sectional design. The exploratory phase would involve examining the above said variables in patients attending psychiatric services at NIMHANS (n=246) of 18-35 years. Phase II includes in-depth interviews with 20 individuals form community and clinical samples with history of child sexual abuse. The pilot phase of the study has been completed.

74. Marital therapy for couples with marital distress and sexual dysfunction. Ms. Manjula V. Guides: Dr. Manjula M, Dr. Janardhana N (NIMHANS Fellowship)

The study aims at exploring and examining the relationship between marital quality, marital intimacy, sexual communication and sexual interaction in a cross sectional sample (N=151) of married individuals with a diagnosis of sexual dysfunction. A format for marital therapy for this sample has been developed and tried out on a subsample of 20 couples to examine its effect on the above variables. Qualitative analysis of the textual data from therapy study and quantitative analysis of the cross sectional data are ongoing.

75. Metacognition, interpersonal functioning and affect regulation across personality disorders and feasibility of metacognitive interpersonal therapy. Ms. Alafia J. Guides: Dr. Manjula M, Dr. Shyam Sundar (NIMHANS Fellowship)

The current study explores the alternate model of personality disorders (PDs) given in DSM-5 with an assumption that all PDs
will have impairment in personality functioning, manifested by difficulties in metacognition, interpersonal functioning and affect regulation. Exploratory and intervention phases will be carried out with the aims of establishing disorder/cluster specific PD profiles and their transdiagnostic nature will be examined and a pilot study will be carried out to test the feasibility of Metacognitive Interpersonal Therapy with all PDs. Both quantitative and qualitative methods of investigation will be adopted.


The aim of the study is to explore early trauma experiences, parental bonding and emotion regulation in patients with borderline personality disorder. Sample included 60 subjects—30 young adults diagnosed with BPD and 30 young adults without any psychiatric disorders. A cross-sectional exploratory research designed was adopted for the study. The subjects in the control group were matched for age and gender with the study group. The data collection was completed with 34 study and 34 control group individuals.

77. Adverse childhood experiences, interpersonal functioning and emotion regulation in patients with major depression. Ms. Swathi TP. Guide: Dr. M Manjula (NIMHANS Fellowship)

The study aimed at exploring adverse childhood experiences, interpersonal functioning and emotion regulation in patients with major depression. The study used two group comparison exploratory study design. The sample consisted of two groups; study group comprised 30 patients with major depression and the control group included 30 never depressed adults matched for age and gender with study group. The tools used were Beck’s Depression Inventory II, MINI, Early Trauma Inventory – Short-form, Inventory of Interpersonal Problems, and Emotion Regulation Questionnaires (DERS and ERQ). The study was completed and submitted.

78. Psychological buffers against suicidal behaviours in depression. Ms. Shreya Mythrei. Guide: Dr. M Manjula (NIMHANS Fellowship)

The aim of the study is to examine the psychological buffers against suicidal behaviours in major depression. The variables studied included, self-efficacy, personal agency, and reasons for living. The study used mixed methods and cross-sectional design. The sample comprised 50 participants diagnosed with RDD. The study involved constructions of the probes for assessing personal agency in the pilot phase and administering quantitative measures as well as semi-structured interview in the main phase. Data collection is completed and analysis of the data is in progress.

79. Beliefs about emotions, sense of coherence, difficulties in emotional regulation in depression. Ms. Aparna Mathai. Guide: Dr. M Manjula (NIMHANS Fellowship)

The aim of the study is to examine the beliefs about emotions, sense of coherence and difficulties in emotional regulation in patients with major depression (MDD). Sample will include 30 patients with Major Depressive Disorder and 30 controls fulfilling the inclusion and exclusion criteria. The tools used for the study are Beck Depression Inventory, Difficulties in Emotion Regulation Questionnaire, Beliefs about Emotion Questionnaire, and Sense of Coherence Scale. The protocol has been submitted for ethical clearance from the institute.

80. Ethical beliefs and practices in psychotherapy and counselling: An exploratory study among mental health practitioners and development of a training module. Ms. Ananya Sinha. Guides: Dr. Poornima Bhola, Dr. Ahalya Raguram, Dr. Prabha Chandra (Funding by UGC-SRF)

The study aims at exploring ethical beliefs and practices in psychotherapy and counselling among mental health practitioners. It also aims to develop a training module on ethics in psychotherapy and counselling. The sample comprised 268 participants including 28 practicing clinical psychologists, 25 psychiatrists, 25 psychiatric social workers, 50 (each) clinical psychology, psychiatry and psychiatric social work trainees and 40 counsellors. A survey schedule was developed, and ethical practices and their perspectives on training in ethics were assessed. In-depth interviews were conducted with a sub-sample of 28 participants. The data collection has been completed.

81. Mentalization and its relationship to attachment and trauma in borderline personality disorder. Ms. K Dharani Devi. Guides: Dr. Poornima Bhola, Dr. Prabha S Chandra (Funding by ICMR-JRF)

Borderline Personality Disorder (BPD) is a complex mental disorder which is characterized by difficulties with emotional regulation, impulsivity, instability in terms of self-image and interpersonal relationships. There have been very few studies exploring the relationship between mentalization and other significant developmental factors such as attachment and trauma. This research aims at understanding the developmental factors implicated in BPD and their associations with general functioning. The aim was to study mentalization and its relationship to trauma and attachment in persons with Borderline Personality Disorder. This mixed method design has two stages. The sample will include sixty individuals with BPD and sixty healthy controls. The assessments include both self-report and task-based measures of mentalization. Additionally, individuals with BPD also respond to self-report measures and in depth interviews for assessment of trauma and attachment. The pilot stage of the study has been completed.
82. Characteristics and psychosocial correlates of non-suicidal self-injury among young adults. Ms. Nupur Singhal. Guides: Dr. Poornima Bhola, Dr. Senthil K Reddi (Funding by UGC)

Non-suicidal self-injurious acts, such as cutting and burning skin, are a growing concern among young adults in the community. This study aims to examine the characteristics of Non-Suicidal Self-Injury (NSSI) and any gender differences. The following affective, cognitive and interpersonal variables will be compared in young adults with and without a history of current NSSI; Emotion Regulation, Experiential Avoidance, Self-Criticism, Brooding Rumination, Attachment Style and Functional Social Support. Associated mental health variables will also be examined. Identification of homogenous sub-groups of individuals engaging in non-suicidal self-injury is the other objective. The sample will include 1573 young adults from colleges in Bengaluru.

83. Personality pathology, health care utilisation, and satisfaction with care in persons with somatic symptom disorder. Ms. Nupur D. Guides: Dr. Poornima Bhola, Dr. Geetha Desai

The study examined personality pathology, health care utilisation, and satisfaction with care in outpatients with somatic symptom disorder. The measures included the Scale for the Assessment of Somatic Symptoms, Dimensional Assessment of Personality Pathology – Short Form, Health Care Utilization Tool, and The Patient Satisfaction Questionnaire - 18. Higher levels of personality pathology had a significant positive association with the severity of somatic symptoms, and a negative association with satisfaction with care. There was no significant relationship between levels of personality pathology and health care utilisation indices. Higher satisfaction with care was related to lower levels of health care utilisation.

84. Psychological and interpersonal needs among terminally ill cancer patients during the end of life care: A qualitative study. Mr. Nishal Pinto. Guides: Dr. Poornima Bhola, Dr. Prabha S Chandra

This ongoing research aims to understand psychological and interpersonal needs among terminally ill cancer patients during the end of life care. The sample includes terminally ill patients and health-care providers at a palliative care centre. A qualitative research design has been used, including both focus group discussions and interviews.

85. Schema modes and cognitive distortions in borderline personality disorder: An exploratory study. Ms. Priya Puri. Guides: Dr. Devvarata Kumar, Dr. M Thomas Kishore, Dr. Muralidhuran K (Funding by UGC-JRF)

Various studies stress the role of cognitions in psychopathology. Change in the behaviours of individuals who are resistant to change, such as those with personality disorders, can be brought about only by understanding their underlying cognitive processes. Schema modes and cognitive distortions are two such important cognitive processes, but these are not well explored in Borderline Personality Disorder. Since individuals with BPD have dysregulation in a multitude of areas of psychopathology, it can be assumed that they may also have a multitude of dysfunctional schema modes and cognitive distortions. Understanding the cognitive processes of BPD shall not only give a better understanding into their psychopathology, but it shall also be helpful in planning their treatment better.

86. Jumping to conclusions' bias in depression: An experimental study. Ms. Shobha Bantula. Guides: Dr. Devvarata Kumar, Dr. G Venkatsubramanian

The study is intended to explore, using an experimental design, the ‘Jumping to Conclusions’ bias in individuals with depression. Patients will be administered beads task to see if they hastily reach to decision or wait for enough information to be gathered before coming to conclusion.

87. Psychosocial aspects of children of female sex workers. Mr. Siddharth Dutt. Guides: Dr. Roopesh BN, Dr. Janardhana

The study intends to explore psychosocial aspects such as attachment, resilience and risk taking behaviour in children of female sex workers. In addition to this it intends to explore perceived stigma, attitude towards education and career; peer and intimate relationships; role models and Just World Belief in children of female sex workers; and child rearing practices in mothers who are sex workers.

88. Cognitive, affective, social and constitutional correlates of risk taking behaviour in adolescents. Mr. Naseer Ahmad Bhat. Guides: Dr. Roopesh BN, Dr. Vivek Benegal, Dr. B Binukumar (Funding by UGC JRF)

The current study focuses on understanding the risk taking behaviours of adolescents from multiple perspectives. Factors from cognitive, affective, social and constitutional domains are therefore included. The pilot phase of the current study is in progress.

89. Awareness, myths and perceived barriers to disclosure of child sexual abuse in adolescents. Ms. Meetal Devgun. Guides: Dr. Roopesh BN, Dr. Shekhar Seshadri

The aim of the present study is to explore awareness, myths and perceived barriers to disclosure of child sexual abuse in adolescents with psychiatric disorder(s) (APD), vulnerable adolescents (VA), and typically developing adolescents (TDA). The study will follow an exploratory and cross-sectional design using mixed methods. Sample would consist of 3 groups and convenient sampling method would be employed to collect the sample. A minimum of 100 participants would be included.
90. **Awareness of child sexual abuse in children. Ms. Pratibha Meena. Guides: Dr. Roopesh BN, Dr. Kavitha Jangam**

Child Sexual Abuse (CSA) is one of the most concerning issues regarding children, across the world. Inspite of pressing nature of the problem, it also remains the least talked matter with children, especially in Indian context. Information regarding the awareness among children is consequential in taking further steps to enhance the knowledge among them by guiding the concerned authorities to develop modules and take further action. The present study assessed the awareness about CSA in children between the ages of 8-12. Personal Safety Questionnaire (Wurtele, 1997) and Children’s Knowledge of Abuse Questionnaire III (Tutty, 2003) were administered to 120 children in grades 3-6 in a small group setting. Results on awareness per se and based on age, class and gender differences will be discussed.

91. **Knowledge of, belief about and attitude towards reporting child sexual abuse in school teachers. Ms. Akhil TS. Guide: Dr. Roopesh BN**

The aim of the study is to understand the knowledge of, belief about, and attitude towards reporting Child Sexual Abuse (CSA) in school teachers. The sample for the study consists of a minimum of 200 school teachers within the age range of 18-50 years. The sampling will involve all the genders from urban background. Tools used for the study include Knowledge and Beliefs about CSA questionnaire (Mażeu, Flores & Gamez, 2016), Teachers Reporting Attitude Scale for child sexual abuse - TRAS-CSA (Walsh et al., 2010), K- 10 (Kessler, 2002). Checklist will be developed for the study to assess the knowledge of, belief about and attitude about reporting child sexual abuse which is not covered by the above mentioned scales. Quantitative data would be analyzed using appropriate descriptive and inferential statistics, depending on the normality of score distributions. For descriptive statistics frequencies, percentages, means and standard deviation will be used. The relationships between variables would be examined using Pearson/Spearman correlations depending on the distribution.

92. **Development of a scale to assess the determinants of coping in parents of individuals with intellectual disability. Ms. Vasudha Hande. Guides: Dr. M Thomas Kishore, Dr. John Vijaya Sagar, Dr. B Binukumar**

in each group. Socio-demographic data sheet and clinical data sheet (to be developed by the researcher) will be used to gather basic information. Appropriate clinical tools will be used to assess severity of symptoms in the APD group. Other tools which will be used to collect data include Strength and Difficulties Questionnaire, Structured Agenda to elicit written narratives about awareness and perceived barriers to disclosure of CSA (to be developed by the researcher) and Child Sexual Abuse Myth Scale. Appropriate data analysis techniques would be employed depending on the nature of the data.

93. **Mother-child interaction: Relationship of well-being in mothers with psychiatric illness and child's cognitive development. Ms. Padmaja Mushahary. Guides: Dr. M Thomas Kishore, Dr. Veena A Satyanarayana, Dr. T Harish**

94. **Individual and relational predictors of couple functioning in women with borderline personality disorder and their spouse. Ms. Fasli Sidheek. Guides: Dr. Veena Satyanarayana, Dr. Geetha Desai**

The study aims to examine individual and relational predictors of couple functioning in women with Borderline Personality Disorder and their spouse. The objectives of the study are to: (i) examine individual factors such as early trauma, differentiation of self and emotion regulation in couples where one partner has BPD, (ii) examine relational factors such as attachment style, intimate partner violence, marital communication, and marital adjustment in couples where one partner has BPD, (iii) compare individual factors such as early trauma, differentiation of self and emotion regulation in clinical and non-clinical control couples, (iv) compare relational factors such as attachment style, intimate partner violence, marital communication, and marital adjustment in clinical and non-clinical control couples, and (v) explore in-depth subjective experiences of patients with BPD and their spouse regarding interpersonal and family functioning, and secondary trauma. A mixed-method design will be adopted and a sample of 40 clinical and non-clinical couples will be recruited. Study measures will be individually administered to the patients and their spouses (and to spouses in the non-clinical control group). Data collection is in progress.


The aim of the study is to examine non attachment and its correlates in patients with common mental disorders and controls. The objectives are to: (i) Explore the association between the eastern construct of non-attachment and the western construct of attachment style in clinical and non-clinical groups (ii) Examine the association between non-attachment and self-esteem in clinical and non-clinical groups (iii) Examine the association between non-attachment and positive and negative affect in clinical and non-clinical groups (iv) Examine the association between non-attachment and subjective wellbeing in clinical and non-clinical groups. The study used a case control design with mixed methods (qualitative and quantitative). Data is currently being analysed.

96. **Attachment style, mother infant bonding and social support in women with postpartum onset of common mental disorders. Ms. Resna Sadan. Guides: Dr. Veena Satyanarayana, Dr. Thomas Kishore, Dr. Prabha S Chandra**

The current study examined the relationship among attachment style, social support, mother-infant bonding in postpartum women.
The objectives will be to examine the relationship between (i) attachment style and mother-infant bonding (ii) attachment style and social support (iii) attachment style and mental health and (iv) social support and mental health in postpartum women. A single group cross-sectional design will be used. Adult married women fluent in English and Tamil, meeting ICD 10 criteria for CMDs will be recruited from outpatient adult psychiatry units and the perinatal clinic. Study measures will be individually administered to women. Relationships among the key study variables will be examined using correlational analysis. Data is currently being analysed.

97. Stakeholders’ perceptions of recovery from severe mental illness: Perspectives from a rehabilitation centre. Ms. Shini VS. Guide: Dr. Aruna Rose Mary Kapanee, Dr. Srikala Bharath

The study aimed to explore the perceptions of recovery from severe mental illness of various stakeholders namely users, carers, mental health trainees, and mental health professionals in the Sakalawara Community Mental Health Centre (SCMHC), a rehabilitation centre, and to understand the differences in the perceptions among the four groups. The sample comprised four stakeholders from each group. Results indicated that majority of the participants have a perception of recovery process which is more clinical in orientation. Recovery is conceptualised by almost all participants as a linear process with clear steps.

98. Development and evaluation of a psychoeducational video for male industrial workers on hazardous use of alcohol. Ms. R Vijayalakshmi. Guides: Dr. Aruna Rose Mary Kapanee, Dr. KS Meena, Dr. Prasanthi Nattala

The study aimed to develop and evaluate a psychoeducational video for male industrial workers on hazardous use of alcohol. Objective of the study was to examine the impact of the psychoeducational video on male industrial workers’ level of knowledge regarding hazardous use of alcohol in terms of its causes, effects and management. Sample comprised 50 male industrial workers from a manufacturing company in Bengaluru. They were administered the ‘Knowledge questionnaire on hazardous use of alcohol’. The findings indicated that the psychoeducational video had an impact on male industrial workers’ level of knowledge regarding hazardous use of alcohol.

99. Conflict resolution styles, self-compassion, values in relation to psychological distress and wellbeing in young adults. Ms. Krishna Kumari K. Guides: Dr. Aruna Rose Mary Kapanee, Dr. Jyotsna Agrawal

The study aimed to examine the relationship between Conflict Resolution Styles, Self-Compassion, Values, Psychological Distress and Psychological Wellbeing in young adults. The sample comprised 200 undergraduate students in the age range of 18-25 years from co-educational colleges in Bengaluru. The tools used were Kraybill Conflict Style Inventory, Self-Compassion Scale, Portrait Values Questionnaire, Kessler Psychological Distress Scale, and Psychological Wellbeing.

100. Evaluation of facial, musical and prosody emotion recognition in patients with Parkinson’s disease. Ms. Babina Asem. Guides: Dr. Shantala Hegde, Dr. Pramod Kumar Pal

The study examined deficits in emotion recognition (in facial, prosody, musical domains) and its relation with cognitive function in patients with Parkinson’s disease (PD). PD (n=32) and matched controls (HC) (n=32) comprised the sample. Compared to HC, PD showed significant deficits in focused attention, verbal and visual working memory and response inhibition. In addition to cognitive deficits, PD showed significant impairment in perception and discrimination of emotions. Performance on the emotion perception and discrimination tasks correlated with several of the cognitive functions. Findings from will add to our understanding of non-motor symptoms in PD.

101. Effect of music on P300 in patients with schizophrenia. Ms. Shika Ahuja. Guides: Dr. Shantala Hegde, Dr. Venkatasubramanian G, Dr. Mariamma Philip

There has been a vast amount of research carried out in understanding P300 deficits in SZ, there has been no research to examine the impact of external stimulus in altering P300 deficits. Studies on non-clinical population have shown music stimulation can improve cognitive functioning. This study will be the first of its kind to assess the effect of music on modulating P300 latency and amplitude in patients with SZ. This can also contribute in the understanding of the attentional processes in SZ and mechanisms underlying it. The study will be carried out on 24 patients using 32-channels EEG recording. The findings of this study can further be used as an evidence to develop interventions to improve cognitive functions which are based on music.


Traumatic brain injury (TBI) is a global burden. According to the World Health Organization, it will surpass many diseases as the major cause of death and disability by the year 2020. There is a large gap in data on litigation status of TBI using evaluation of neuropsychological assessment in India. The study would thus aim at profiling cognitive function and electrophysiological baseline. In addition to the existing method, the focus would be on utilizing the effort, symptom and performance components to interpret

The research is designed to study internal self-talk, perceived parenting and psychological well-being among adolescents through a mixed method, cross-sectional design. A community sample comprising 20 adolescents between the ages of 13–16 (grades 8 to 10) and 40 adolescents between the ages of 17 and 19 (grades 11 and 12/ I and II PUC) was used. After being screened with SDQ, adolescents scoring below the cut-off have been evaluated using Self-Talk Inventory, Parental Authority Questionnaire and Well Being Manifestation Measures Scale. Qualitative data has also been collected for the variables studied.

104. Adolescents’ definition of self and their psychological wellbeing. Ms. Gowrishri S. Guide: Dr. M Nithya Poornima (Funding by UGC-JRF) 

The study is designed to examine the (i) relationship between clarity in self-concept in adolescents and their well-being and 2) patterns of self-construal among adolescents. A cross-sectional, mixed method design will be adopted with a community sample of 70 adolescents between 16-18 years of age. After being screened with SDQ, adolescents scoring below the cut-off will be assessed using the Self-concept Clarity Scale and Well Being Manifestation Measures Scale for quantitative analysis of relationship between the variables. The Twenty Statements Test will be used to qualitatively analyze self-construal patterns.

105. Development of assessment tool for mindfulness. Mr. Vinoth Babu. Guides: Dr. Nitin Anand, Dr. Mahendra P Sharma 

The objective of the study is to develop a tool for assessing mindfulness and conduct preliminary investigation about some of its psychometric properties. Initial step would be generation of items. This process would be followed by item reduction procedures which would include consultation with research team members and experts. A sample of 100 English speaking adults within age-range of 18-21 years pursuing their undergraduate studies from Bengaluru would be considered for selection. The data obtained would be analyzed by utilizing item reduction procedures and through the SPSS software for evaluating the appropriateness of items.

106. Development of therapy satisfaction scale. Ms. Ishita Mondal. Guides: Dr. Nitin Anand, Dr. Paulomi M Sudhir, 

The objective of the study is to develop a therapy satisfaction scale and conduct preliminary investigation about some of its psychometric properties. Initial step would be generation of items. This process would be followed by item reduction procedures which would include consultation with research team members and experts. A sample of 100 English speaking adults within age-range of 18-21 years pursuing their undergraduate studies from Bengaluru would be considered for selection. The data obtained would be analyzed by utilizing item reduction procedures and through the SPSS software for evaluating the appropriateness of items.

107. Attachment styles, personality and social context of individuals with substance use disorders. Mr. Sandeepa Kaur. Guides: Dr. Gitanjali Narayanan, Dr. Arun K (NIMHANS Intramural Funding/Grant) 

The aim of the study was to understand the attachment styles, personality and social context of individuals with substance use disorders. An exploratory, cross-sectional mixed methods research design was employed (N=50, 18-45 years). The study group was comprised of patients with primary diagnosis of any substance use disorder. It was found that individuals with substance use disorders had insecure attachment and were high on neuroticism. Qualitative findings indicated that majority of the participants started using substances under peer influence. Other reasons for using substances were found to be curiosity, relaxation, dealing with negative emotions and having with interpersonal difficulties. The social setting, religion and neighborhood also played a significant role.

108. Early maladaptive schemas in patterns of relating and working of substance users: A qualitative study. Ms. Senta Christy. Guides: Dr. Gitanjali Narayanan, Dr. Arun K (NIMHANS Intramural Funding/Grant) 

The aim of the study is to examine the Young's Early Maladaptive Schemas (EMS) and its relationship to interpersonal relationships and work engagement in the substance use disorder population. A qualitative research design involving semi-structured interview schedules and scripts will be used (N=20). Thematic analysis will be done. The results of the study will help in building interventions across work settings and in maintenance of recovery of individuals consuming substances.

109. Association of kleshas and brahmaviharas with psychological distress and wisdom among college going youth. Ms. Smrithi M. Guides: Dr. Jyotsna Agrawal, Dr. Aruna Kapanee (NIMHANS Intramural Funding/Grant) 

The current research attempts to study self-reported and peer nominated wisdom in college youth. It also explores its association with yogic ideas of Klesha (Ahamkara, raga/asakti and dwesha) and Brahmvihara (maître, karuna, mudita and upeksa), along with psychological distress. It is a mixed method research using both self-reported questionnaires and in-depth interviews. It is first in a series of studies to build bridges between ancient Indian psychological concepts and modern psychology.
110. A study of trigunas, anasakti, personality, and subjective wellbeing in a male clinical and community sample. Ms. Chandana Balakrishnan. Guides: Dr. Jyotsna Agrawal, Dr. Mahendra P Sharma, Dr. Pratima Murthy (NIMHANS Intramural Funding/Grant)

The study is planned to explore association between Satva, Rajas and Tamas, with dimensions of personality, with positive and negative affect and with satisfaction with life. It will also study how anasakti/non-attachment is associated with these variables in males from a clinical and community sample.

111. Effectiveness of music based cognitive remediation therapy in Parkinson's disease. Mr. Mohit Gothalw. Guides: Dr. Shantala Hegde, Dr. Rita Christopher, Dr. Pramod Pal

Cognitive and emotional processing deficits are common in Parkinson's disease (PD) and contribute to the disability and reduced quality of life. Cognitive neurorehabilitation programmes often lack holistic approach in addressing all domains. Music-based cognition remediation therapy (MCRT) offers a holistic approach in addressing various symptoms like cognitive deficits, emotional processing deficits and motor symptoms in PD. The objectives of this study are to evaluate the effectiveness of MCRT primarily on cognitive functions, emotional perception, timed tests to measure motor functions—especially electrophysiological markers (resting state EEG, event-related potential P300, Bereitschafts potential) and serum BDNF in PD patients.

112. A Randomized Controlled Trial of Cognitive Retraining and EEG Neurofeedback Training in Traumatic Brain Injury: A Clinical, Cognitive, Electrophysiological, Biochemical and fMRI study. Mr. Mohd Afsar, Guides: Dr. Jamuna Rajeswaran, Dr. Dhaval Shukla, Dr. Sarada Subramanian, Dr. Rose Dawn Thomas

Traumatic brain injury (TBI) is a condition which is rapidly growing and is a great source of concern worldwide. TBI leads to several clinical, cognitive, electrophysiological, biochemical and functional alterations. Assessment and evaluations of these alterations are vital in planning future neuropsychological rehabilitation. NFT and cognitive retraining both have been used as effective methods of neuropsychological rehabilitations in TBI. In this study, it is proposed to elucidate the underlying mechanism of their actions by clinical, cognitive, electrophysiological, biochemical and function MRI studies.

113. Effectiveness of cognitive retraining in hippocampal Sclerosis patients following epilepsy surgery; Psychosocial and structural correlates. Dr. J Pasricha. Guides: Dr. Keshav Kumar, Dr. Sanjib Sinha, Dr. J Saini

Neurological Rehabilitation

1. Study of urodynamic profile in patients with Parkinson's disease and Progressive supra-nuclear palsy with bladder dysfunction. Investigators: Dr. Anupam Gupta, Prof. Pramod Pal, Dr. Meeka Khanna

The aim of the study is to see the prevalence of neurogenic bladder dysfunction in cases of Parkinson's disease and Progressive Supranuclear Palsy. Their bladder dysfunction management will be based on the urodynamic findings. So far 13 patients have been assessed, and the investigators aim to recruit 40 patients.

2. Developing exoskeletal robot for patients with myelopathies. Investigators: Mr. Girish, Bionic Yantra, Dr. Anupam Gupta (Funding by Biotechnology Industry Research Assistance Council)

The aim of the study is to create a prototype 'Exoskeletal Robot' in the country which will be cheaper compared to the currently available such Robots, mainly manufactured in the USA and Japan. After the Prototype is ready, field trial will be conducted with myelopathy patients admitted to Neurological Rehabilitation Department at NIMHANS. The final stage will be commercial production once the field trial is successful.

3. Study of sexual dysfunction and sexual concerns among persons with disability due to myelopathy; assessment of unmet need for rehabilitation services and development of a hospital based sexual rehabilitation package. Investigators: Dr. Meeka Khanna, Dr. Anupam Gupta, Dr. AB Taly (Funding by ICMR)

Comprehensive neurological rehabilitation should address sexual function of affected individual to allow them highest level of function and quality of life. Sexuality of disabled people is not considered important and few studies explored this issue in India. This study aims to assess the sexual dysfunction and sexual concerns among patients with myelopathy attending rehabilitation unit of a tertiary care hospital. At the end of study, the investigators expect to be able to describe: the type of sexual dysfunction in persons with disability due to myelopathy; the various sexual concerns that these persons have; and the specific but unmet need for care for sexual dysfunction among these males and females. The investigators would also develop a rehabilitation package for Indian set-up, enlisting the above findings, and that would help rehabilitation clinicians to address the sexual dysfunction needs of the persons with disability due to myelopathy.

Students:

4. Peripheral nerve block and intra-articular steroid injection of shoulder joint in treatment of CRPS (complex regional...
The objective of the study was to examine the effect of peripheral nerve blocks and intra-articular steroid injection of shoulder joint in CRPS of upper limb with respect to pain, range of motion of the joints and hand swelling. This was a single centre, prospective, hospital-based study and included cases of CRPS of any etiology in the age group of 18-70 years, within 12 months duration of illness. Pre-intervention measurements included measurement of ROM of shoulder, wrist, MCP and IP joints of hand; Pain Score: VAS (0 -10) and size of the Hand (cm). After written consent, injections were given under aseptic conditions. Post injection, gentle passive range of motion exercises (PROM) of all the joints was started. The patient caregivers were shown the exercise program to be executed three times daily with 10 – 15 times repetitions. Primary outcome measure was overall reduction in pain and secondary outcome measure was improvement in passive ROM of the joints and reduction in the swelling of the hand. All the measurements were reassessed after 1 week.

Statistical analysis was performed using Stata 11. The significance of p value was adjudged against an alpha of 0.05. Results showed that median age of patients was 54.5 years and median disease duration was 54.5 days. All joints range of motion showed significant improvement in ROM. Reduction in pain scores and hand swelling was not significant. The findings proved that this is a safe, less invasive, OPD procedure with minimal complications.

5. Comparison of heart rate variability parameters during filling and voiding phase of urodynamic study in patients with myelopathy. Dr. Tenzil C Gomez. Guides: Dr. Anupam Gupta, Dr. Rashmi Krishnan UK

Comparison of the heart rate variability parameters during filling and voiding phase of urodynamic study in patients with myelopathy was the prime objective of the study. Twenty traumatic and nontraumatic myelopathy patients with onset within 6 months were enrolled into this prospective cross-sectional diagnostic interventional study. After standard management of bladder with urine routine and ultrasound abdomen, patient was explained about first sensation of filling, first desire to void, strong desire to void and urgency sensations according to International Continence Society terminology. As part of the diagnostic programme, a single cystometric study at 10ml/min with 6Fr microtip and integrated pressure transducers during which the patients indicated bladder sensations was performed. Simultaneously, as part of the research programme ECG was recorded using Bioharness Zephyr Technology and heart rate variability calculated at each event of filling phase and during voiding phase.

Outcome measures were bladder volume at each sensation, detrusor pressure, standard deviation of NN interval, root mean square of successive differences, total power, average heart rate, high and low frequency.

1. Pattern of technology addiction among undergraduate nursing students at college of nursing, NIMHANS (INI) Bengaluru, India. Investigators: Dr. Ramachandra, Dr. Valliammal Shanmugam, Dr. Sailaxmi Gandhi

The aim of the study is to assess the pattern of technology addiction among undergraduate nursing students at the College of Nursing, NIMHANS. It is a quantitative descriptive study conducted at College of Nursing, NIMHANS among 240 male and female (first year to fourth year) B.Sc. nursing students.

Results showed that 250 female undergraduate students acknowledge the use of video game and internet and 1.3% found to have problematic status for food, TV and shopping. Correlation analysis revealed significant 0.534 at 0.05 levels in association with items of loneliness. To conclude, it is the need of the hour to focus on the prevention and rehabilitative aspect of technology addiction in adolescents for a better quality of life.

2. Culturally sensitive communication and psychosocial skills training for health professionals involved in end of life care – An evaluation of Innovative methods. Investigator: Dr. Ramachandra (Funding by ICMR)

3. Adolescent Children of Alcoholics (ACoAs): Assessment of cognitive functions, salivary stress biomarkers, gender-based experiences and responses to their fathers’ alcohol dependence. Investigators: Dr. Prasanthi Nattala, Dr. M Thomas Kishore, Dr. Pratima Murthy, Dr. Rita Christopher, Dr. Preeti Jacob (Funding by DST)

The offspring of fathers who drink excessively are a vulnerable group, being constantly exposed to stressful home environment. However, there is dearth of Indian literature about the adverse impact of parental alcohol use on children. The proposed study aims to evaluate cognitive functions of Adolescent Children of Alcoholics (ACoAs) (10-19 years), and also use objective measures viz. salivary biomarkers to assess stress among ACoAs, and compare these with Adolescent Children of Non-Alcoholics (ACoNAs). The study also proposes to assess experiences/responses of ACoAs to their fathers’ alcohol use, by developing and establishing psychometrics of a scale to assess such responses from a gender perspective.

4. Effectiveness of nurses implemented music add-on therapy (NIMAT) in managing children with behavioral problems admitted in Child Psychiatry Ward, NIMHANS, Bengaluru. Investigators: Dr. Radhakrishnan, Dr. John Vijay Sagar, Dr. Ramachandra (NIMHANS Intramural Funding/Grant)
Nurses have great opportunity to spend more time with the children admitted in the Child Psychiatry Centre and with their parents while providing the nursing care. A module of music prepared in collaboration with child psychiatrist and music experts oriented in mental health treatment may be tested for the effectiveness an add-on therapy to bring down the behavioral problems of children admitted to Child Psychiatry Centre. Scientifically proven Ragas will be selected and validated by the investigators to prepare a module of an add-on therapy. This add-on therapy will be implemented by the nurses (with proper training) to reduce the behavioral problems of children admitted in Child Psychiatry Centre.

**Students:**

5. **Impact of traditional versus modern teaching strategies on psychiatric nursing learning of BSc nursing students from specific Colleges of Nursing, Bengaluru.** Mrs. D Mythili. Guides: Dr. Sailaxmi Gandhi, Dr. A Thirumoorthy

A posttest-only design was used to evaluate the impact of traditional and modern teaching strategies on the psychiatric nursing learning outcome of third year B.Sc. nursing students. The traditional teaching strategy group underwent intervention using lecture method while the modern teaching strategy group was exposed to brain storming, concept mapping and problem based learning. The impact was assessed with the Knowledge Assessment Questionnaire (KAQ), Clinical Performance Rating Scale (CPRS), Student Learning Perception Scale (SLPS) and the Clinical Performance Rating Scale (CPPS) developed by the researcher. A posttest assessment was done at the end of 2 weeks and 4 weeks.

The findings indicated a significant increase in the knowledge, clinical performance, learning perception and clinical performance perception (p<0.05) among the students exposed to modern teaching strategies. There was a significant correlation between knowledge and clinical performance in both traditional as well as modern teaching strategy groups.

6. **Effect of play therapy on disruptive behaviour disorders among children attending Child and Adolescent Psychiatry Department, NIMHANS, Bengaluru.** Ms. Achla Dagdu Gaikwad. Guides: Dr. K Lalitha, Dr. Shekhar Seshadri

A quasi experimental design was used. 42 subjects (21 experimental and 21 controls) with DBD and their parents were selected using convenience sampling. Both groups underwent pre-assessments using structured interview with child and parents. After pre-assessments experimental group received play therapy with treatment as usual (Parent Management Training) and control group received TAU, in 8-15 sessions, two sessions per week for 45 min to one hour duration. Additional assessment of play observation on experimental group was conducted during play therapy sessions. Post assessment was conducted using same instruments for both groups, after one week of the last session. The data was analyzed using descriptive and inferential statistics. Play therapy had significant beneficial impact on anger, aggression, social competence, family stress and coping in children with DBD and their family. The study demonstrates that behavior therapy contributed to issues that were related to parent management techniques, whereas the use of play helped the parents at a specific level to connect to the child in joyous, process-based activities, where there is no pressure of correct outcomes, thus enabling the child to experience a more loved and validated sense of personhood.

7. **Effectiveness of behavioural skills training on knowledge of sexual abuse and resistance ability among children with intellectual disability.** Mrs. Natasha Thomas. Guides: Dr. Prasanthi Nattala, Dr. Shekhar Seshadri

8. **Development and implementation of nursing module for nurses' knowledge, attitude and practice related to abuse among women with mental illness.** Mrs. Poreddi Vijayalakshmi. Guides: Dr. Sailaxmi Gandhi, Dr. Suresh Badamath, Dr. Marimuthu

9. **Development and pilot testing of a Skill-Based Intervention (SBI) for young adults with harmful substance use in an urban community.** Ms. D Padmavathy. Guides: Dr. Sailaxmi Gandhi, Dr. Suresh Badamath, Dr. Pratima Murthy

10. **Efficacy of Life Style Modification Intervention on Metabolic Syndrome in persons with schizophrenia on treatment with Antipsychotics in a tertiary level psychiatric centre at Bengaluru.** Ms. G Jothimani. Guide: Dr. Sailaxmi Gandhi

11. **Efficacy of anger management programme on the anger level, problem solving skills, communication skills and adjustment among school going adolescents in Bengaluru.** Ms. A Shamala. Guide: Dr. G Radhakrishnan

12. **Effect of Brief Life Style Intervention (BLI) to promote healthy use of mobile phone among nursing students in NIMHANS, Bengaluru.** Ms. Maya Sahu. Guides: Dr. Sailaxmi Gandhi, Dr. Manoj Kumar Sharma

13. **An experimental study to evaluate the effectiveness of nursing intervention on level of attention and occupational functioning ability in patients with schizophrenia receiving treatment at NIMHANS, Bengaluru.** Ms. Madhurima Kundu. Guides: Dr. K Lalitha, Dr. Naren P Rao, Dr. Rajakumari P Reddy
As part of the study, 29 patients with schizophrenia were randomly assigned to experimental and control group. The socio demographic and illness data were collected using Socio-Demographic and illness Profile Data Sheet developed by the researcher and Brief Psychiatric Rating Scale. Attention and occupational functioning were assessed by Digit Symbol Substitution Test, Digit Vigilance Test, Figural Visual Scanning, Triads, Colour Trails 1 and 2 and Occupation Functional Ability Assessment Scale, before and after the intervention. The experimental group received 10 daily individual sessions of nursing intervention which included card games, grain sorting, colouring, letter cancellation activities. The control groups received 10 daily group sessions of psychoeducation on schizophrenia. The findings showed statistically significant difference between the experimental and control group on level of attention and occupational functioning ability.

14. Effectiveness of structured teaching programme on knowledge of primary caregivers of inpatients with psychiatric illness about suicide risk management, at NIMHANS, Bengaluru. Ms. Thejaswini Padua A Kallan. Guides: Dr. Sailaxmi Gandhi, Dr. V Senthil Kumar Reddi

The present study was conducted in the psychiatric open wards of NIMHANS, Bengaluru. One group pre-test post-test research design was adopted. Thirty consenting subjects who met the selection criteria were recruited through convenience sampling technique. The subjects’ knowledge as well as perception was measured by using Caregivers Knowledge Assessment Questionnaire (CKAQ) which is prepared by the researcher and standardized tool, Gatekeeper Behavior Scale (GBS- Albright G. L. et al. 2016). The data was collected at pre-intervention, immediate post assessment and follow-up assessment after one week. The structured teaching program was administered in four consecutive days. There was a statistically significant change in knowledge level as well as subjects’ perception about suicide risk management following structured teaching program at p 0.05 level.

15. Stigma perception among primary caregivers of inpatients with Schizophrenia at NIMHANS, Bengaluru- A mixed method approach. Ms. Neethu Rose John. Guides: Dr. Sailaxmi Gandhi, Dr. Prabha S Chandra

The aim of the study was to explore the perceptions of primary care givers of schizophrenia about stigma. The study was conducted in the open and special wards at NIMHANS, Bengaluru. Mixed method approach with sequential explanatory design – participant selection model was used. A total of 30 participants who met the eligibility criteria were selected using convenience sampling. World Health Organization’s Family Interview Schedule stigma version which consists of 14 questions was used to collect the quantitative data. Purposive sampling was used for selecting subjects for qualitative data. Qualitative data collection was done using seven questions which the researcher had prepared and validated. Analysis revealed statistically significant (p<0.05) association between socio-demographic and illness variables like caregiver gender (female), patient gender (female), and age of onset (<30years) with stigma score.

16. Effectiveness of structured teaching programme on knowledge of teachers regarding child abuse and neglect at selected schools of Bengaluru. Ms. Tamizharasi A. Guides: Dr. Ramachandra, Dr. Shekhar Seshadri

The study aimed at improving the knowledge of teachers regarding child abuse and neglect by structured teaching programme. The study was carried out among the teachers in selected schools of Bengaluru. A one group pre-test post-test design was adopted. Thirty three subjects who consented for the study and met the inclusion criteria were recruited through convenience sampling technique. Pilot study was conducted after which the data for the main study was collected using sociodemographic information sheet and structured knowledge questionnaire. Following the pre-assessment, the structured teaching programme was provided to the subjects for 1 hour 30 minutes for two consecutive days. Post assessment was then administered one week after the last session to evaluate the effectiveness of the structured teaching programme. Analysis revealed statistically significant (p=0.001) increase in the knowledge score after the structured teaching programme. The study findings support that the structured teaching programme was effective in improving the knowledge of teachers regarding child abuse and neglect.

17. Effectiveness of video assisted structured aerobic exercise programme on mood and somatic symptoms among women with depressive disorders admitted in psychiatric wards of NIMHANS, Bengaluru. Ms. Amrita Roy. Guides: Dr. Radhakrishnan G, Dr. Muralidharan K

The study was adopted with an aim to develop a video of structured aerobic exercises and examine its effect on the mood and somatic symptoms of women with depressive disorders.

A pretest, posttest control group design was adopted for the study. The study sample included adult women diagnosed with depressive disorders admitted in psychiatric wards of NIMHANS, Bengaluru. Sample size was 40 (20 subjects in each experimental and control group). After pre-test, experimental group received 10 sessions of intervention (video assisted structured aerobic exercise programme) and the control group underwent treatment as usual. A post-test was conducted after the completion of 10 sessions for the experimental group and after 10 days for the control group using the Hamilton Depression Rating Scale (HDRS), Visual Analogue Mood Scale (VAMS) and Depression Somatic Symptom scale (DSSS). There was a significant reduction in depression and mean mood score in HDRS at p=0.05 between the two groups. There was no statistically significant reduction in mean somatic symptom score between the groups.
19. Effectiveness of mindfulness-based stress reduction (MBSR) on subjective distress and psychological well-being among primary caregivers of patients with schizophrenia. Ms. Amutha V. Guides: Dr. Lalitha K, Dr. Mahendra P Sharma

The present study adopted a pre-experimental (one group pre and post-test design). The subjects were selected by convenient sampling (n=28) from the group which met all the inclusion and exclusion criteria for the study. The tools used for the data collection were Socio-Demographic and Clinical Data Sheet (SDCS), developed by the researcher, Perceived Stress Scale (PSS) (Cohen, Kamarck, Mermelstein,1983), Stress Response Checklist (Vermawo Rao Subbakrishna 2004), WHO Well-being index (WHO-5) (WB) (Bech, 2004), Follow-up Meditation Form (WMF) developed by the researcher. Mindfulness based stress reduction programmes were provided by the researcher once in 5 days for 6 weeks (1-1.30 hour session) followed by daily home practice. Analysis was done using descriptive and inferential statistics. Paired t-test was used to compare the effectiveness of the program. ANOVA and t-test was used to find the association between socio demographic variables with pre-interventional stress score. Pearson correlation was used to find the relationship between pre intervention total score of subjective distress and psychological well-being.

Analysis revealed statistically significant reduction in distress level and improved psychological wellbeing.

College of Nursing

1. Maternal mental health promotion – Efficacy of training program among Auxiliary Nurse Midwives. Investigators: Mrs. P Vijayalakshmi, Dr. Sailaxmi Gandhi, Dr. Prabha S Chandra, Dr. Ramachandra, Dr. Geetha Desai, Dr. Sundernag (Funding by ICMR)

The last few years have seen an increase in epidemiological data on Post-Partum Depression (PPD) in India. ANMs are in unique position to identify and refer the women with perinatal disorders. The aim of the study is to impart knowledge and skills among ANMs in detecting, referring and management of women with maternal mental health problems. True experimental design among randomly selected ANMs working at PHCs in Karnataka state will be adopted for the study. Researchers will develop the questionnaire to assess subjects’ knowledge, attitude and practices related to perinatal disorders. Training programme will be provided to the ANMs in the experimental group. Post-tests will be assessed (immediately means within a week, at 3 months and 6 months) from both experimental and control groups.
2. Assertiveness and Self-esteem in adolescents. Investigators: Dr. S Valliammal, Dr. BV Kathyayani, Mrs. Deiva K

Assertiveness and self-esteem in adolescents are the instruments for expressing themselves without any psychological disturbances in different situations. It is essential for a better emotional wellbeing and to maintain socially supportive relationships. A descriptive correlation survey research design is adopted for the collecting data from 60 adolescents from a selected children hospital, OPD, Bengaluru using simple random sampling technique. Rathus Assertiveness Schedule and Rosenberg Self-Esteem Scale are used to assess the assertiveness and self-esteem in adolescents. The data will be analyzed using descriptive and inferential statistics.

3. Health-promoting lifestyle behaviours and quality of life of student nurses with the view to develop information booklet. Investigators: Dr. S Valliammal, Dr. BV Kathyayani, Dr. A Tirumoorthy, Mrs. Deiva K (Funding by RGUHS)

The study is intended to survey the health-promoting lifestyle behaviours, such as Self-Actualization, Health Responsibility, Exercise, Nutrition, Interpersonal Support, and Stress Management and their health related quality of life among student nurses. Nurses are the main players in providing and performing health promotion initiatives. They are often sought by not only their own patients but also members of the community to advice on matters related to health. Hence it is important that nurses themselves walk the talk, so to speak. Studies that examine the health-promoting lifestyle of nurses are scarce. Healthy lifestyle practices among student nurses can be a strong indicator of the academic level of the students from one hand and achieving personal goals from the other hand. It is noted that the student nurses are always busy with their curriculum and most frequently forget to take care of themselves.

This study will give information about the student nurses’ health-promoting lifestyle behaviours and quality of life. If any student nurse requires assistance to improve the health promoting practices and quality of life, those student nurses will be assisted by providing information materials as required with the consultation of the physician and psychiatric social worker.

Psychiatry

1. Addressing Concerns of Women Admitted to Psychiatric Institutions in India - An In-depth Analysis. Investigators: Dr. Pratima Murthy, Dr. Naveen Kumar C, Dr. Suresh Badamath, Dr. Prabha S Chandra, Dr. Srikala Bharath, Dr. Vranda MN, Dr. Poornima Bholu, Dr. Sailaxmi Gandhi (Funding by National Commission for Women)

2. Understanding the neurobiological effects of oxytocin on social trust deficits in schizophrenia multimodal imaging genetics study. Investigators: Dr. Naren P, Dr. Sandhya M, Dr. Chandana (Funding by DST)

3. Accelerating the application of Stem cell technology in Human Disease (ASHD): Accelerator program for discovery in brain disorders using stem cells (ADBS). Investigators: Dr. Sanjeev Jain, Dr. Mathew Varghese, Dr. Vivek Benegal, Dr. Prabha S Chandra, Dr. Pratima Murthy, Dr. YC Janardhan Reddy, Dr. Srikala Bharath, Dr. BN Gangadhar, Dr. John P John, Dr. Venkatasubramanian Ganesan, Dr. Biju Viswanath, Dr. Janardhanan CN, Dr. Urvakhsh Mehta, Dr. Jagadisha Thirthalli, Dr. PT Shivakumar, Dr. Muralidharan Kesavan, Dr. Naren Rao, Dr. Arun Kandaswamy, Dr. Shyam Sunder, Dr. Meera Purushottam, Dr. Jitender Saini, Dr. Thennarasu Kandavel, Dr. Ramakrishnan Kannan, Dr. Deepak Jayarajan, Dr. Bhupesh Mehta, Dr. B Binu Kumar (Funding by DBT)

Development of clinical SOPs for recruitment of subjects is complete. Recruitment of families into this cohort with initial brief assessment of putative endophenotypes is in progress. Plans are afoot to carry out deep phenotype assessments along with neuroimaging and electrophysiological studies (when MRI facility gets ready by May 2017).

The process and protocols for generating and banking hiPSC’s as well as basic characterization has been set up by inStem and the target of 50 iPSC lines for first year has been achieved.

Work has been initiated by NCBS on all aspects of cellular characterization. The pipeline for whole exome sequencing of human samples and a bioinformatics platform for basic analysis and variant prediction have been set in place. Functional assays for cellular characterization have been made operational.

4. An exploratory study of the role of inflammasomes on aberrant neurodevelopment in schizophrenia. Investigators: Dr. John P John, Sydney Moirangthem (Funding by DST Indo-Tunisia Grant)
5. The effect of yoga on mirror neuron activity in healthy individuals: A prospective study using TMS and fNIRS. Investigators: Dr. Urvakhsh M Mehta, Dr. Jagadisha Thirthalli, Dr. G Venkatasubramanian, Dr. Shivarama Varambally, Dr. BN Gangadhar

Thirteen subjects underwent pre and post yoga (at least 15 sessions) TMS experiments to determine motor cortical reactivity. Cortical silent period, a marker of GABA-B mediated neurotransmission significantly increased after yoga.

6. Investigating the influence of motivational drive on mirror neuron activity in schizophrenia and healthy volunteers. Investigators: Dr. Urvakhsh M Mehta, Dr. Jagadisha Thirthalli.

The investigators found a difference in mirror neuron activity (healthy controls > schizophrenia) for the salient action observation in the fasting condition. This indicated that motivational drive did not enhance mirror neuron responses in schizophrenia patients. In fact, it perhaps did so in healthy volunteers. This was substantiated by a reduced mirror neuron activity response in healthy subjects during the repeated experiment when subjects were post-prandial (satiated). Interestingly, the patient group had greater mirror neuron activity for the salient action observation during satiated (repeated experiment) state rather than a fasting state. This perhaps indicates a deviant relationship between motivational drive and mirror neuron system responses in patients with schizophrenia.

7. Utility of automated speech assessment to differentiate thought disorder between Schizophrenia and mania. Investigators: Dr. Jagadisha Thirthalli, Dr. Urvakhsh M Mehta, Dr. Vandana [Funding by IBM-SUR (Shared University Research)]

The study aims to explore automated software derived differences in speech sample analyses in schizophrenia and bipolar disorder, compare them with clinical speech abnormality categories, cognitive and clinical symptoms. The sample collection and follow-up assessments are currently underway.

8. Modulating mirror neuron activity in schizophrenia: A novel translational application of MRI-guided transcranial magnetic stimulation. Investigators: Dr. Urvakhsh M Mehta, Dr. BN Gangadhar, Dr. Jagadisha Thirthalli, Dr. G Venkatasubramanian, Dr. Rose Dawn (Funding by Wellcome Trust / DBT India Alliance Early Career Fellowship)

The study aims to explore how mirror neuron system activity can be modulated using MRI-guided neuronavigational Transcranial Magnetic Stimulation using a randomized controlled experimental design in schizophrenia patients. The association between malleability of the mirror neuron system and social cognition will also be measured. Similar experiments will be conducted in a smaller group of healthy subjects.

9. Neurobiological Correlates & Translational Implications of Neuromodulation in OCD: A High Definition Transcranial Direct Current Stimulation (HD-tDCS) Study. Investigator: Dr. Janardhanan CN (Funding by Wellcome Trust-DBT India Alliance)

The proposed study aims to examine the effect high-definition transcranial direct current stimulation (HD-tDCS) on neurocognitive functioning in patients with OCD. This would be examined through comprehensive assessment of neurohemodynamic changes and electrophysiological changes pertaining to error monitoring and response inhibition coupled with the assessment of neurochemical alterations (NAA and glutamate) before and after HD-tDCS sessions using a randomised sham controlled design. In addition, the translational implications of modulation of the cognitive function would be examined by assessing the clinical improvement with HD-tDCS.

10. Neural and immunological predictors of SSRI response in obsessive compulsive disorder. Investigator: Dr. Janardhanan CN (Funding by DST)
This project aims to unravel a composite neuroimaging and neuroimmune based biomarker for SSRI response in OCD. The project involves longitudinal assessment of medication naïve OCD patients through neuroimaging and immune assessments to examine the biosignatures of medication response. Data collection for the project is in a near completion stage- analysis is ongoing.

11. Therapeutic effects of yoga in depression: A neurobiological investigation. Investigator: Dr. Muralidharan Kesavan (Funding by DST under the SATYAM scheme)

The main objective of this project is to evaluate the efficacy of Yoga as an add-on treatment in depression based on clinical rating scales. This study will be conducted to evaluate the various parameters like HRV, using resting state ECG, GABA mediated CI, using TMS, neurohemodynamic correlates of emotion processing, using fMRI in patients with depression receiving add-on Yoga therapy compared to those on conventional treatment and in healthy subjects. Further, plasma levels of BDNF, IL-1, IL-6 will be determined in patients with depression receiving add-on Yoga therapy compared to those on conventional treatments and in healthy subjects.

12. Intermittent theta burst stimulation of cerebellar vermis in Schizophrenia: Impact on negative symptoms and brain connectivity. Investigators: Dr. Rakshathi Basavaraju, Dr. Muralidharan Kesavan (Funding by Wellcome Trust – DBT India Alliance)

Theta Burst Stimulation (TBS) is a novel patterned rTMS technique whose safety and efficacy has been established in a small group of schizophrenia patients in an open label study, the target area being cerebellar vermis. The study aims to examine the efficacy of iTBS (intermittent TBS) to the cerebellar vermis for negative symptoms in schizophrenia, to further assess the resting state functional connectivity correlates of clinical improvement in negative symptoms and impact on cognitive deficits. The study will be conducted as a double-blind randomized controlled trial, where 60 patients of schizophrenia meeting inclusion and exclusion criteria will be randomized to intervention arm (30 patients, who will receive iTBS) and control arm who will receive sham TMS (30 in each group). Pre- and post-assessments include positive and negative symptom severity, depressive symptoms, extrapyramidal symptoms, general cognition and social cognitive assessments, vital signs and cerebellar adverse effects. Patients will receive iTBS or sham-TMS for 5 days (two-sessions a day, four hours apart). The site of cerebellar stimulation will be carried out through MRI guided Neuronavigation. Results will be analysed using mixed-model analysis.

13. A study of status of reproductive and sexual health and prevalence of sexual dysfunction among young individuals with mental and substances use disorder related disability. Investigators: Dr. Shyam Sundar A, Dr. Harish T (Funding by ICMR)

This is a multicenter research project conducted at AIIMS, New Delhi and NIMHANS, Bengaluru. The study aims to understand the status of reproductive and sexual health among young individuals with mental disability. The study uses an amalgam of quantitative and qualitative methodology. A total of 87 patients with serious mental disorders have been evaluated for the quantitative part of the study. The qualitative part of the study is ongoing.

14. The role of prenatal maternal stress and poor nutrition as synergistic factors in pregnancy and foetal outcomes. Investigators: Dr. Sundarnag Ganjekar, Dr. Geetha Desai, Dr. Harish T, Dr. Venkatasubramanian, Dr. Prabha S Chandra, Dr. Nanda Kumar (NIMHANS Intramural Funding/Grant)

In this study, the researchers are attempting to study the role of prenatal maternal stress and poor nutrition as synergistic factors in pregnancy and foetal outcomes. The study aims at understanding the stress level and its hormone, cortisol levels during pregnancy and perinatal outcomes. The study focuses on understanding the effects of cortisol and micronutrients vitamin B12, folic acid, serum calcium and iron on the mental health conditions like anxiety and depression.

15. A family based association study of glutamatergic genes in OCD in a South Indian population. Investigators: Dr. YC Janardhan Reddy, Dr. Sanjeev Jain (Funding by ICMR)

The investigators have recruited 152 patients and 304 first-degree relatives. Leukocyte DNA was extracted from 10ml of whole blood by salting out method and extracted DNA was stored at -20°C. The extracted DNA was subjected to genotyping at SNPs in candidate genes of interest using polymerase chain reaction (PCR).

GRIN2B rs1805502 polymorphism: Case control analysis was carried out in 377 patients and 449 controls (samples from previous work and this project pooled). There was no significant difference between cases and controls in genotype or allele frequency.

SLC1A1 rs3056 polymorphism: Case control association study was carried out for this polymorphism on 377 patients and 449 controls. The rarer GG genotype is noted to be significantly more frequent in the cases compared to controls. The G allele is also noted to be significantly overrepresented in the cases compared to controls. The family-based association analysis needs to be completed for the full sample (152 trios).

16. Mood stabilizer plus antidepressant versus mood stabilizer plus placebo in the maintenance treatment of bipolar disorder funded by the Canadian Institutes of Health Research (CIHR). Investigators: Dr. YC Janardhan Reddy, Dr. Muralidharan K, Dr. Suresh BM, Dr. A Shyamsundar, Dr. Janardhanan CN (Funding by Canadian Institutes of Health Research)
The study is ongoing. Totally, 52 patients have been recruited into open label phase, and 37 in double-blind phase. Seven patients have dropped out and two have relapsed into mania and have reached endpoint of the study.

17. Identifying reproducible brain signatures of obsessive-compulsive profiles (NIMH R01MH113250-01).
Investigators: Dr. YC. Janardhan Reddy, Dr. Ganesh Venkatasubramanian, Dr. Janardhanan CN (Funding by National Institute of Mental Health)

Investigators: Dr. Preeti Sinha, Dr. Urvakhsh Mehta, Dr. Rose Dawn Bharath, Dr. Rita Christopher (Funding by DST-CSRI)

The aim of the study is to measure the BFECT associated memory deficits over a 6-week period in patients with depressive episode and correlate with brain neuroimaging findings. In total, about 120 patients have been screened and 28 patients recruited for the study. Eight patients have dropped out and eight have successfully completed the study. Both neuropsychological and brain neuroimaging findings are not analyzed yet. The former includes detailed memory testing and other cognitive functions briefly. Neuroimaging includes both structural and resting state fMRI of brain. In addition, blood sample is taken but not yet analysed for BDNF levels. All assessments are done before starting ECT, soon after the completion of ECT and 6 weeks later.

19. Patterns and predictors of adverse effects associated with 2nd generation antidepressants- a large naturalistic study.
Investigators: Dr. Preeti Sinha, Dr. Sanjeev Jain, Dr. Chittaranjan Andrade (Funding by ICMR)

20. Early psychosocial predictors of child mental health: longitudinal study of shared and distinctive risk and protective factors in UK and India.
Investigators: Dr. Prabha S Chandra, Dr. Geetha Desai, Dr. John K Vijaysagar, Dr. Thennarasu, Dr. G Venkatasubramanian, Dr. Thomas Kishore, Dr. Shoba Srinath, Dr. Helen Sharp, Reader in Clinical Psychology, NHS Consultant Clinical Psychologist, Department of Psychological Science, IPHS, University of Liverpool, Dr. Jonathan Hill, Professor of Child and Adolescent Psychiatry, The University of Manchester, Dr. Andrew Pickles, Professor of Biostatistics and Psychological Methods, Director of UKCRC Registered King’s Trials Unit, King’s College London (Funding by Indian Council of Medical Research (ICMR), India and the Medical Research Council (MRC), UK).

The aims of the study are to examine the early risk and protective factors for childhood mental health problems, to further identify prenatal and infancy risks that are common to Western and South Asia populations and those that are distinctive. This is a prospective, longitudinal postnatal follow-up of 650 women and their infants enrolled through the ICMR funded PRAMMS pregnancy study conducted by the Indian PI. The women were recruited during pregnancy, with measurement at three time points during pregnancy and at 8 weeks after delivery. In the study, the investigators are assessing the PRAMMS cohort at the ages 6 months, 12 months and 24 months to identify prenatal, parental / care giving environment and developmental processes that influence behavioural and cognitive outcomes in children and families over time. The measurements being used to assess the above factors are standardised scales and checklists, video recordings, speech samples, Bayley, biological samples, mother and child anthropometry.

Investigators: Dr. Prabha S Chandra, Dr. Geetha Desai, Dr. Thennarasu, Dr. Kavita Jangam, Dr. Padmalatha VenkataRam, President, Bangalore OBG Society, Dr. Veena Satyanarayana, Dr. Aruna Muralidhar, Consultant Obstetrician and Gynecologist, Rangadore Hospital (Funding by ICMR)

This cohort study aimed at examining the prevalence and risk factors for anxiety and depression in pregnant women across pregnancy and studying its relationship with health care utilization and negative pregnancy outcomes. Overall 700 women were recruited into the cohort and assessments were conducted at 4 time points – during each trimester of pregnancy and after delivery to record the outcomes. At present, all antenatal assessments have been completed and details of birth outcomes are being recorded from the mothers. Among the
completed outcome assessments, overall 34 women had reports of a miscarriage and 2 women had an Intra Uterine Death (IUD). Eighteen neonatal deaths, 5 still births and 1 maternal death have been reported so far. Other poor outcomes (low birth weight and preterm delivery) would be estimated based on the classification standards for the same. Longitudinal data analysis to generate the results is ongoing.

22. A multicomponent intervention to reduce home-exposure to second-hand smoke (SHS) during pregnancy and postnatal period: a randomised controlled trial. Investigators: Dr. Prabha S Chandra, Dr. Pratima Murthy, Dr. Veena Satyanarayana, Dr. Rumana Haque, Bangladesh, Dr. Atif Rahman, UK (Funding by DBT, India and Medical Research Council, UK)

Based on the qualitative component of the study, women reported exposure to SHS throughout pregnancy but felt a sense of helplessness in negotiating smoke free homes. They felt the need of allies to request husbands not to smoke in front of them or it would be ineffective. The factors that were found to help husbands to stop smoking inside home were the unborn baby, other children's health and pressure from other family members. Amulti-component intervention including pictorial intervention booklet, cotinine measure and feedback, Letter from the future child and mobile phone voice calls directed at smoking member (husband) of the family was developed. Pilot RCT to test the effectiveness of this multi-component intervention has been initiated.

23. A prospective study of prevalence and predictors of perceived need and utilization of formal care in persons with dementia. Investigators: Dr. PT Sivakumar, Dr. Preeti Sinha, Dr. Thirumoorthy (Funding by ICMR)

The study attempts to evaluate the prevalence of perceived need for formal care services in persons with dementia and its clinical correlates. About 65 patients with dementia and primary caregivers have been recruited till now. The study includes both quantitative and qualitative components. There will be follow-up assessment after one year to evaluate the change in perceived need for formal care during the intervening period.

24. Yoga and schizophrenia – A comprehensive assessment of neuroplasticity. Investigator: Dr. Shivarama Varambally (Funding by Wellcome Trust-DBT India Alliance)

The proposed research aims to test the effects and mechanisms of Yoga-based intervention as an add-on treatment in schizophrenia by conducting a randomized controlled study assessing clinical symptoms, emotion processing, quality of life, and real-world functioning. The mechanisms of action of yoga in schizophrenia are proposed to be investigated using an integrated panel of assessments pertinent to neuroplasticity parameters – Serum Cortisol, Serum Brain derived Neurotrophic Factor (BDNF), serum oxytocin, serum insulin, Electroencephalography (p300), gene expression studies (Oxytocin and BDNF) and functional Magnetic Resonance Imaging (fMRI).

25. Neurobiological effects of oxytocin on metacognitive deficits in schizophrenia: A pharmacological MRI–Imaging genetics study. Investigators: Dr. Naren Rao, Dr. Shivarama Varambally (Funding by DST)

The primary aim of the study is to obtain first in-vivo imaging data, using phMRI, investigating effects of single dose OXT on functional brain activation of neural networks underlying metacognition. Our secondary aim is to examine the effect of OXTR SNP rs2254298 on this functional brain activation underlying metacognition. A total of 22 patients with schizophrenia and 22 HV will be included in the study. The screening procedure will include a clinical interview for psychiatric assessment and urine screening for toxicology. Subjects who meet inclusion and exclusion criteria for the study will be recruited. After completion of clinical assessments and neuropsychological assessments all subjects will undergo baseline fMRI scan. Later subjects will receive single dose of OXT/saline in counterbalanced order and undergo repeat fMRI scans. Blood will be collected for OXTR gene polymorphism and will be analyzed.

26. Identifying biomarkers of clinical response to High-Definition transcranial Direct Current Stimulation (HD-tDCS) in treatment resistant schizophrenia: A multimodal brain imaging study with translational implications. Investigators: Dr. G Venkatasubramanian, Dr. Shivarama Varambally, Dr. Muralidharan Kesavan, Dr. Naren P Rao, Dr. CN Janardhanan (Funding by DST)

Based on the background works published through the WISER neuromodulation program, this research proposal aims to assess a novel neuromodulatory experimental brain research paradigm using
High-Definition Transcranial Direct Current Stimulation (HD-tDCS) that can ascertain the pathogenetic significance as well as clinically translatable implications of these brain imaging measures.

This MRI-guided HD-tDCS protocol will utilize precise, personalized placement of electrodes using state-of-the-art optical localization technique guided by subject-specific structural / functional MRI in combination with as computational analyses to ensure personalized, computational neuromodulation. Preliminary results of the computational neurostimulation analyses of conventional tDCS are depicted in the accompanying figure. The novel research paradigm proposed in this protocol can usher in a new field of personalized neuromodulation and open up pioneering applications of translational neuroscience to understand the neural basis as well as formulate neurobiologically-informed neuromodulatory treatment approaches for several enigmatic neuropsychiatric disorders.

27. Translational research on the neuroimmunopathology of schizophrenia (Center of Excellence and Innovation in Biotechnology–Institutional Programme Support). Investigators: Dr. G Venkatasubramanian, Dr. BN Gangadhar, Dr. V Ravi, Dr. SK Shankar, Dr. DK Subbakrishna (Funding by DBT)

The vision of this programme is to create an international calibre translational research facility integrating clinical, neuroimmunological, neuropathological, neuroimaging and advanced computational research techniques to examine the Neuroimmunopathogenetic Model for Schizophrenia. The significance of this research focus is emphasized by the observation that Schizophrenia – one of the most severe neuropsychiatric disorders – has been ranked among the top ten most disabling medical disorders by the World Health Organization. More importantly, the etiopathogenesis of this complex disorder is not fully understood and inflammatory processes possible due to immunopathogenesis resulting in glutamatergic aberrations is considered among the most comprehensive & integrative models to understand the pathogenesis of schizophrenia. Critically, this model offers potential avenues for novel interventions.

28. iSupport for Dementia family caregivers. Investigators: Dr. Mathew Varghese, Dr. Santosh Loganathan (Funding by WHO, Geneva)

The overall goal of the project is to develop an effective online support programme for caregivers of people with dementia. To evaluate whether the online programme is effective, NIMHANS is currently conducting the study of the programme designed in collaboration with WHO, Geneva and Stanford University, USA. The work conducted during the review period includes the following: (i) The adaptation of the online generic English version of iSupport to the Indian setting in accordance with the WHO adaptation guide and the Trimbos CMS manual. (ii) Preparation and carrying out of the pilot field testing on 10 dementia caregivers. (iii) Preparation and pre-measurements for the effectiveness study on iSupport in India according to protocol. (iv) Participation in the calls of the project team and expert panel. (v) The recruitment for the RCT has been started and is on-going.

29. Harmonized Diagnostic Assessment of Dementia (DAD) for Longitudinal Aging Study of India (LASI). Investigators: Dr. Mathew Varghese, Dr. PT Sivakumar, Dr. Santosh Loganathan, Dr. Keshav Kumar J, Dr. John P John [Funding by LASI, a Ministry of Health & Family Welfare project which is also part funded by National Institute of Aging (under NIH, USA; HMSC-approved) and United Nations Population Fund (UNFPA), India and Bhutan]

The aims and objectives of the study are: (i) To apply the novel protocol for detection of mild cognitive impairment (MCI) and dementia among older participants of Longitudinal Ageing Study in India (LASI) in Indian languages (ii) To study the demographic variables of subjects with MCI and dementia detected by the novel assessment protocol among the LASI subjects (iii) To study the biological markers (physical abnormalities, blood biomarkers and imaging markers) in subjects with MCI and dementia detected by the novel assessment protocol among the LASI subjects (iv) To make
this data available to in public space for researchers to carry out various analysis including establishing the probability of dementia and MCI for each LASI respondent and prevalence rates at national, state, and sub-population levels (v) To analyze the data and develop a shorter protocol to be used in community for subsequent waves of LASI.

**Students:**

30. **Parental consanguinity and its association with metabolic abnormality in schizophrenia patients living in a rural community of South India: A clinical and genetic investigation.** Mr. Vikas Agarwal. Guides: Dr. Jagadisha Thirthalli, Dr. Rita Christopher, Dr. Naveen Kumar C (CSIR – SRF Fellowship)

The objectives of this study are to compare the rate and degree of parental consanguinity between patients with schizophrenia living in a rural community in South India and that among healthy controls in the same community and to examine the association between parental consanguinity and metabolic abnormalities in patients with schizophrenia. This study is expected to provide additional insights into the complex mechanism of metabolic abnormalities associated with schizophrenia and its treatment, in particular the role of parental consanguinity and hence the role of recessive transmission of risk factors for the development of metabolic abnormalities in patients with schizophrenia.

Abnormalities in complex biological pathways and signaling mechanisms manifest in the case of depression. The efficacy of antidepressants is debatable. The aim of the study is to explore the effects of yoga, which is an alternate form of treatment, on the molecular mechanisms contributing to the disease. Neuroplasticity is a key process affected in depression. The decremental role of inflammation on neuroplastic mechanisms is well studied. The objective is to show the effect of yoga on stress responses in a peripheral cell model in patients with depression.

31. **Effect of yoga on yoga therapy on peripheral blood lymphocyte mononuclear cell (PBMC) response to stress in patients with depression.** Ms. Aditi Devi N. Guides: Dr. Shivarama Varambally, Dr. Rita Christopher

32. **Salivary alpha amylase levels in mothers with postpartum psychosis: An indicator of stress response and clinical correlates.** Dr. Sai Komal. Guides: Dr. Harish T, Dr. Rita Christopher, Dr. Binukumar B, Dr. Prabha S Chandra

The primary objective of this study is to determine the salivary-alpha amylase (SAA) levels as a stress response in postpartum psychosis. The secondary objectives are to study the changes in SAA levels and its association with mother infant bonding and to elucidate the changes in SAA levels over the period of recovery.

33. **Social cognition deficits in patients with mild Alzheimer’s disease.** Dr. Evan Thomas Johnson. Guides: Dr. Mathew Varghese, Dr. Urvakhsh M Mehta

The objective of the study is to assess the social cognition deficits of patients with mild AD and to investigate its relationship with the symptoms and functioning.

The interaction of neurocognitive domains like executive function and memory would influence the performance on social cognition testing in dementia patients. The social cognition deficits might contribute to the level of functional impairment in dementia patients.

34. **Effect of add-on Yoga therapy on Social cognition deficits and mirror neuron activity in patients with Schizophrenia–A single blind randomized controlled trial.** Dr. S Shalini Naik. Guides: Dr. Shivarama Varambally, Dr. Shivarama Varambally, Dr. Urvakhsh M Mehta, Dr. BN Gangadhar

The study primarily aimed to look at the effect of yoga intervention on Social Cognition (SC) and Mirror Neuron Activity (MNA) in patients with schizophrenia and to examine the correlation between change in MNA and change in social cognition. The investigators hypothesized that SC and MNA would improve significantly in the yoga group after the intervention of add-on yoga therapy of 20 supervised sessions within 6 weeks when compared to waitlist group and change in MNA will predict change in SC in patients receiving yoga therapy. Baseline Socio-demographic Data, Chlorpromazine equivalents & Clinical assessments scores between the two groups (n=30) are comparable and they are not statistically significant different from each other. Baseline Social Cognition Composite Index (SCCI), Resting Motor Threshold (RMT) and Stimulus intensity at 1mV (SI1mV) of both groups is comparable and the difference is not statistically significant. The study found that yoga therapy group after the intervention of add-on yoga therapy of 20 supervised sessions within 6 weeks when compared to waitlist group had shown statistically significant improvement in Social cognition composite index (SCCI) when compared to waitlist group. Yoga therapy did not show any improvement in MNA activity when compared to waitlist group. It could be due to low sample size. However, yoga therapy group has shown trend of changes in improvement of Short Interval Intracortical Inhibition (SICI) when compared to waitlist group. The change in Social Cognition Composite Index (SCCI). There is no correlation between change in SC deficits and change in MNA. This
35. Short-term outcome of treatment-naïve obsessive compulsive disorder. Dr. Ghadigaonkar Deepak Shantaram. Guides: Dr. A Shyam Sundar, Dr. YC Janardhan Reddy, Dr. Janardhanan CN

This prospective, naturalistic follow-up study was undertaken to examine the short-term outcome after initiation of treatment in patients with treatment-naïve OCD and to analyse the clinical predictors for the outcome.

Sixty four treatment-naïve OCD patients were recruited for the study and evaluated at baseline using standard assessment tools: MINI plus, YBOCS, CGI scales, GAF scale, HDRS, HARS. Follow-up assessment was done minimum of 6 months till maximum of 2 years after initiating treatment. The study revealed an optimistic outcome with more than half (53%) patients showing response at follow-up. Most of the responders (88%) were under remission. A higher baseline severity of illness was associated with poor outcome.

36. GSK3-Beta polymorphisms and associated clinical parameters in patients with bipolar illness. Dr. Bharathram SR. Guides: Dr. Sanjeev Jain, Dr. Biju Viswanath, Dr. Meera Purushottam

The study was designed to find association between GSK-3B 50T/C and clinical parameters including age at onset, presence of psychotic symptoms and total number of episodes in patients with Bipolar Disorder in Indian population. Genotyping was done and clinical history was collected for 175 subjects who had given consent to participate in the study. No significant association was found between GSK-3B 50T/C and the studied clinical variables including age at onset, presence of psychotic symptoms, total number of episodes in this study.

37. An association study of GRIN2B gene and postpartum psychosis. Dr. Sara George Eraly. Guides: Dr. Harish T, Dr. Meera Purushottam

The study compared the gene polymorphism GRIN2B rs1805502 between women with postpartum psychosis and healthy controls. The study also examined different clinical variables with genotype and allelic frequencies. The total sample size was 295; genotyping data was not available for 4 subjects. The investigators found primiparity, delivery related complications, female sex of the baby and family history of psychiatric illness to be significant risk factors for postpartum psychosis. No significant difference was found between the genotype and allelic frequencies between cases and controls. No significant differences were observed when the relationship of the clinical variables to the genotype and allelic frequencies were compared.

38. Clinical and cognitive correlates of prefrontal modulation with transcranial Direct Current Stimulation (tDCS) in patients with alcohol use disorder. Dr. Vinutha R. Guides: Dr. Pratima Murthy, Dr. G Venkatasubramanian, Dr. Prabhat Kumar Chand

The study investigated the clinical utility of tDCS in patients with alcohol use disorder (AUD). In this double blind, randomized control trial, 24 patients with AUD were randomized into true and sham arm of tDCS and its effect on craving response inhibition were assessed using Penn Alcohol Craving Questionnaire and Visual Stop-Signal task on Day 5 and one month after fifth session of tDCS.

tDCS was administered for 5 consecutive days with an intensity of 2mA for a duration of 20 minutes per day with anode over right dorsolateral prefrontal cortex (DLPFC) and cathode over left (DLPFC). All patients tolerated tDCS without significant adverse effects. Stimulation of right DLPFC with tDCS was noted to significantly improve inhibitory control and time taken to relapse, though no difference was found in craving score and tDCS can be explored as an alternative method for management for AUD.

39. A double blind randomised sham controlled study to examine clinical benefits of transcranial Direct Current Stimulation (tDCS) in OCD. Dr. Shayanth M, Guides: Dr. YC Janardhan Reddy, Dr. G Venkatasubramanian, Dr. Janardhanan CN

The objective of the study is to examine the efficacy of add-on tDCS (transcranial direct current stimulation) in obsessive compulsive disorder patients with persistent symptoms using a double blind randomised sham controlled design.
Patients [N=22] with persistent obsessive compulsive symptoms (YBOCS>16 despite being on a stable SRI dose (serotonin reuptake inhibitors) for at least 3 months) were given add-on tDCS treatment in a randomised double blind sham controlled design [True- N=11; Sham-N=11] followed by open label extension for those who had less than 25% reduction in YBOCS score at the end of RCT phase. Response is defined as percentage reduction of YBOCS score ≥25% was considered to define response. Patients who received true anodal Pre-SMA/ SMA stimulation showed greater trend towards improvement [Fisher’s exact=0.09] and higher rates of response [responders n=4 (36.4%), non-responders n=7 (63.6%)] with true tDCS compared to sham tDCS. None responded in the sham group. True anodal Pre-SMA/SMA stimulation showed trend towards greater improvement and higher rates of response with true tDCS compared to sham tDCS. This evaluates a novel and safe treatment strategy in OCD where treatment resistance is common. tDCS might lend itself as an attractive strategy to understand the neural circuitry abnormalities and neuroplasticity mechanisms in OCD.

40. A study on the utility of legal aid clinic at the National Institute of Mental Health and Neuro Sciences, Bengaluru. Dr. Kadiveti Sri Harsha. Guides: Dr. Naveen Kumar C, Dr. Suresh Bada Math, Dr. Sydney M

The study aimed to explore the utility of the legal aid clinic at NIMHANS, to understand the legal needs of patients/family members and to document the nature of legal aid that’s offered at the clinic. Prospective design and an exploratory study method were adopted. A total of 71 cases were interviewed and 59 cases were followed up after two months. Following descriptive and inferential analysis, it has been observed that in 76.6% of the cases the legal issue was related to the clinical condition. 64.4% of the cases have implemented the advice obtained at the clinic, 28.8% had their issues resolved and 32.2% cases have legal proceedings going on at follow up. Indicating that, the legal aid clinic is a novel way of addressing the legal needs of patients with psychiatric disorders.

41. Effect of single session tDCS on auditory signal detection in Schizophrenia. Dr. Sowmya S. Guides: Dr. G Venkatasubramanian, Dr. Shivarama Varambally, Dr. Muralidharan K, Dr. Janardhanan CN

The study objective was to evaluate the status of auditory signal detection (ASD) in Schizophrenia patients in comparison with healthy controls (HC) and to investigate the effect of single session tDCS on ASD in schizophrenia. Twenty four schizophrenia patients with AVHs and 24 HC participated in this study. All patients as well as HC performed a baseline ASD task. Patients received tDCS - double blinded, randomized control trial with a cross over design. HC had a significantly better discriminability index (P=0.019) than schizophrenia patients. A single session of true tDCS did not demonstrate any significant difference in ASD parameters when compared to sham.

42. Psychiatric advance directives in India: Patient and family members’ perspective. Dr. Sharad Philip. Guides: Dr. Suresh Bada Math, Dr. Naveen Kumar C, Dr. Sydney M

Psychiatric advance directives will soon come into effect with the enactment of Mental Health Care Bill. There is paucity of research assessing outcome of such measures in interdependent collectivist society such as India. This study assessed patient and family members’ opinion regarding PADs by developing semi-structured questionnaire. This study was done as an exploratory cross sectional survey in a psychiatric outpatient department of a tertiary care hospital. The findings suggest that both patients and family members are interested in the concept of PADs however family members expressed some reservations. The potential consequences of such a move are far reaching and the risks far outweigh the potential benefits. Its harmonization with the existing societal fabric is suspect. The mental health care machinery in India is already resource strapped and the introduction of PADs for now is ill advised.

43. Study on clinical utility and tolerability of transcranial direct current stimulation in mild cognitive impairment. Dr. Murugaraja Venkatachalam. Guides: Dr. PT Sivakumar, Dr. Preeti Sinha, Dr. G Venkatasubramanian

This study investigated the feasibility, tolerability and clinical utility of tDCS in patients with MCI. In this observational study that included 11 patients with MCI, tDCS with an intensity of 2 mA and duration of 20 minutes per day was administered for 5 consecutive days with anode over left dorsolateral prefrontal cortex (DLPFC) and cathode over right supra orbital region and outcome was measured using picture memory impairment test (PMIT) immediately and also 1 month after the 5th session of tDCS. All the patients tolerated tDCS sessions without any significant adverse effects. Stimulation of left DLPFC with tDCS was noted to significantly improve the immediate and delayed recall performance of the patients in PMIT after five days of stimulation and most of the benefits were persistent at one month follow-up.

44. Adverse effects of lithium and electroconvulsive therapy combination: A comparative study. Dr. Mahesh Jagatap. Guides: Dr. Jagadisha Thirthalli, Dr. Naveen Kumar C, Dr. A Shyam Sundar

Lithium ECT combination appears to be safe but caution should be kept for cognitive adverse effects. Some trend in side effects with use of combination is seen needing further investigation. Lower serum lithium level has been advised as there is negative correlation between serum lithium level and performance on verbal memory. Lithium
cardio protective during ECT. Lithium in therapeutic dose doesn’t affect seizure duration to significant extent.

45. **Effect of Transcranial Direct Current Stimulation (tDCS) on craving of alcohol dependence syndrome and associated changes in the functional brain imaging (An fMRI and MRS Study).** Dr. Jitendra Biswal. Guide: Dr. Prabhat Kumar Chand

Transcranial Direct Current Stimulation (tDCS) is one of these evolving techniques in the field of brain stimulation, which modulates neuronal resting membrane potentials (RMP) resulting in changes in cortical plasticity and excitability. However preliminary data from the few published studies suggested that tDCS helps in reducing craving for smoking and is also helpful in abstinence from alcohol. This study was designed firstly to explore the effect of tDCS treatment on cue reactivity and secondly to explore the effect of tDCS treatment on central glutamate activity in recently abstinent alcohol dependent patients.

46. **A study of thyroid function and negative symptoms in Schizophrenia.** Dr. NS Guru Prasad. Guides: Dr. SK. Chaturvedi, Dr. Krishna Prasad M

Thyroid dysfunction in negative symptom schizophrenia has not been seperately studied. Studying thyroid hormone dysfunction in negative symptoms will help in better understanding of the neurobiology and exploring its possible role for the management of negative symptoms.

The aim of the study was to examine thyroid function in schizophrenia patients with predominant negative symptoms. Major findings of this study include: (i) low serum concentrations of T3 in schizophrenic patients with predominant negative symptoms (ii) negative correlation between low serum levels of T3 and Higher SANS score (iii) negative correlation between alogia, anhedonia and impaired attention.

47. **PPARG Polymorphism (Pro12Ala) in Alzheimer’s dementia with diabetes: An exploratory study 5.** Dr. Abhishek Pratik Purty. Guides: Dr. Sanjeev Jain, Dr. Preeti Sinha, Dr. Meera Purushottam

The objective of the study was to examine the distribution of PPARG Pro12Ala polymorphism in Alzheimer’s dementia (AD) with and without diabetes as compared to controls, and also explore the polymorphism in relation to socio demographic and clinical features of AD. Patients with AD were identified in the geriatric clinics and services and clinical and routine investigations details were collected from them after informed consent. They were also asked to give blood sample for genotyping. Fifty two patients consented and 52 age matched control samples were taken from the molecular genetics laboratory. Genotyping was done for both patients and controls and statistical analysis was done to compare distribution of polymorphism between AD patients with and without diabetes and controls with and without diabetes.

A significant association was found between Pro12Ala and AD in those AD subjects with co-morbid diabetes. No associations were however found between Pro12Ala and AD or diabetes independently.

48. **A study on theory of mind and emotional awareness deficits in patients with somatoform disorders.** Dr. Abel Thamby. Guides: Dr. Geetha Desai, Dr. SK Chaturvedi, Dr. Dr. Urvakhsh M Mehta

Somatoform disorders are one of the most common disorders encountered in primary care settings. Emotions develop from a less differentiated to highly differentiated level and their arrest at a lower level is hypothesized to be resulting in somatization disorder.

The study aimed at investigating theory of mind and emotional awareness in patients with Somatoform disorders. Twenty patients with Somatoform disorders along with 20 healthy controls matched for age, sex and education were recruited. Emotional awareness was measured using the Levels of Emotional Awareness Scale (LEAS) in which participants had to provide descriptions of feelings in 20 imaginary situations. The Theory of Mind was measured using the Social Cognition Rating Tool in Indian Settings. The responses were scored using standardized manual.

Patients with somatoform disorders scored significantly lower on LEAS and the Theory of Mind compared to healthy controls. The above difference remained significant even after controlling for comorbid depressive and anxiety symptoms.

49. **Factors associated with suicidal attempts: Cross sectional study at a psychiatry tertiary care center.** Dr. Goutham K. Guides: Dr. V Senthil Kumar Reddi, Dr. Sydney Moirangthem, Dr. Prabha S Chandra

The present study is descriptive and cross-sectional in nature. The sample consists of patients with recent suicidal attempt recruited from the psychiatric wards of NIMHANS. A total of 110 consecutive patients with recent suicidal attempt, who sought treatment at NIMHANS during 2014-17, were recruited irrespective of their psychiatric diagnosis. Various socio demographic factors and other tools were used to identify primary psychiatric illness, personality traits, hopelessness, suicidal ideation and intent, and to understand contribution of stress on suicide. Perceived stress scale and PSLES were used to assess stress in the last one month and last one year respectively.

Major findings of study are as follows: (i) Suicide attempt was most common in younger age group, either married or unmarried, from an urban background, and semiskilled by occupation, and had either schooling or graduate (ii) No difference between SSA and MSA group in socio demographic variables except for marital history (iii) Positive family history of suicide predicted multiple suicidal attempt in
individual (iv) Axis I diagnosis did not predict elevated risk for multiple suicide attempts (v) No difference in personality traits screened with IPDE between SSA and MSA group (vi) Negative life events in last one year predicted multiple suicidal attempts in individual.

50. Tattoos as self-expression, idioms of distress and explanatory model. Dr. Divyasadree S. Guide: Dr. Santosh Loganathan

Tattooing in the Western civilization is depicted as mark of anti-sociality/sociopathy and as a mark that protects one from danger (mark of toughness, or rebellion). In India, however, tattooing is seen among two sections of people: a) Young fashionable adolescents and b) Rural people who may attach deeper cultural meanings to tattooing. The relationship of tattoos and psychiatric presentation remain largely unexplored in the Indian context and hence the need to have a basic exploratory understanding of the phenomena.

A semi structured interview incorporating the Explanatory Model Interview Catalogue (EMIC) was developed, translated and validated in the local language Kannada and Hindi. Twenty in-depth interviews were conducted in English, Hindi and Kannada. Interviews were recorded and photographs of the tattoos were taken and analyzed using atlas.ti (qualitative data analysis software). Qualitative analysis was done using a grounded theory approach. Categorical queries were also included in the assessment that enabled quantification of variation and implications of tattooing.

The sample had a mean age of 26 years with majority comprising of men, who were unmarried, unemployed and belonged to Hindu community. Key areas were identified under all the sub-sections of EMIC: Explanatory models, stigma, perceived cause and help-seeking. In addition, specific elaborations on tattooing were discussed: these were regarding process of tattooing, what meaning it holds for the patient, location of tattoo and how it is related to the illness.

51. Adverse effects and developmental outcome of infants exposed to atypical antipsychotics during breastfeeding. Dr. Santosh Kumar Sinha, Guides: Dr. Prabha S Chandra, Dr. Harish T, Dr. John Vijay Sagar, Dr. M Thomas Kishore

Postpartum period in women is vulnerable for occurrences and exacerbations of psychiatric disorders. Postpartum psychosis and Bipolar disorder are two major psychiatric disorders in which antipsychotic drug are primarily used. There was need for safety data on adverse effects and developmental outcome of infants exposed to atypical antipsychotics during breastfeeding. Study was planned to assess acute adverse effects among infants exposed to atypical antipsychotics by breastfeeding and to assess development and anthropometric measurement at follow up. Twenty eight infants whose mothers had been started on atypical antipsychotics and who were being breastfed were recruited with the informed consent of mother. Side effects were checked every alternate day for 1-2 weeks using the check list based on common side effects of atypical antipsychotics. Developmental assessments using DASII and Anthropometric measurements like weight, length, head circumference, chest circumference were noted in follow-up when they came as outpatient. Data was analysed using SPSS version 20. The investigators reached on conclusion that atypical antipsychotics may lead to adverse effects such as Sedation and Constipation in the infant through breast milk. However, the frequency of these is quite low. Developmental delay was noted in a proportion of infants; however this seemed to be associated with low birth weight.

52. Neurological soft signs and cortical activation during an executive function task in patients with Schizophrenia. Dr. Pavithra N. Guides: Dr. Shivarama Varambally, Dr. G Venkatasubramanian, Dr. Naren P Rao

53. PTSD, depression and somatization following traumatic childbirth. Dr. Lakshmi S. Guides: Dr. Prabha S. Chandra, Dr. Geetha Desai, Dr. Veena Sathyarayaraya, Dr. Latha Venkatram

The traumatic experience of childbirth is seen in 30-50% of women giving birth and can lead to PTSD and depression, which are major mental disorders. Hence the study of association between these disorders and the factors underlying it will help to reduce the maternal morbidity significantly.

This is a community-based cross-sectional study, including both quantitative and qualitative methodologies involving 95 primiparous women. The experience of childbirth was assessed through CEQ, PTSD, Depression and Somatization were assessed through PCL, EPDS and SASS questionnaires respectively. The statistical analyses were performed through SPSS version 21. Prevalence of negative childbirth experience in our population is 52.6%. Prevalence of PTSD following traumatic childbirth is 7.4% and partial PTSD is 10.5%. Prevalence of depression following traumatic childbirth is 12.6%. Obstetric violence predicts traumatic childbirth. Postpartum depression is a predictor of post-natal PTSD. Presence of PTSD, stressful life events and obstetric violence are factors associated with the development of depression following traumatic childbirth.

54. Comparison between Donepezil 10mg and 23 mg in Patient’s with Moderate–Severe Alzheimer’s Dementia; Single blinded randomized controlled trial in Tertiary Care Centre. Dr. Prabhu Jadhav. Guides: Dr. PT Sivakumar, Dr. Preeti Sinha, Dr. Ajit Dahale

Alzheimer's disease (AD), an irreversible and progressive neurodegenerative disorder, represents the most common cause of dementia worldwide. BPSPD can be prevalent up to 90% of the patients with AD. Donepezil 23mg SR has been approved for the
moderate and severe Alzheimer disease and showed efficacious in cognitive deficits and tolerability. Currently there is limited evidence for the Donepezil for the management of BPSD.

The primary objective of the study is to compare the effectiveness of Donepezil 10mg and 23mg in behavioral and psychological symptoms in patients with moderate to severe AD. The secondary objectives are to explore the effect on the caregiver burden, quality of life, functionality, cognitive deficits and adverse side effects.

In this study the investigators found there was a pattern of higher clinical improvement in behavioral symptoms followed by quality of life, caregiver burden, functionality, severity of AD, and cognitive deficits in either groups however, no statistical significance was found. This is a preliminary study to explore the effectiveness of 10mg and 23mg on BPSD. There is need for further evaluation of this in future with larger sample size and longer duration of study period.

55. Effects of oral naltrexone V/s Baclofen Treatment on cue induced craving for alcohol-A comparative fMRI study. Dr. Karthik S. Guides: Dr. Vivek Benegal, Dr. G. Venkatasubramanian, Dr. Rose Dawn Bharath

The present study aimed at comparing the effects of baclofen and naltrexone on cue induced craving and prediction of relapse risk in individuals with severe alcohol dependence. The study was conducted on inpatients in CAM, NIMHANS. Thirty two treatment-seeking right-handed men were recruited for the study after informed consent. Following detoxification and drug-washout, they underwent a task-based fMRI while viewing images of alcohol-related and control cues presented to them using a previously validated fMRI paradigm. All patients received anti-craving medications (Baclofen-60-80mg/d, n=16; Naltrexone-50-100mg/d, n=16), following 15 days of treatment, a post treatment scan was done and all patients were prospectively followed-up till their first alcohol lapse.

Random-effect analysis using one-sample test revealed significant CR to alcohol-related cues (relative to implicit baseline) with activation in salience-reward related regions [insula, cingulate, dorsal striatum (DS)], visual-attention regions [Occipito-temporal] and deactivation of default-mode regions [posterior cingulate (PCC)] (All significant at \( P_{\text{FWE}} < 0.05 \), whole-brain corrected). Cox-proportional hazard regressions revealed that greater CR in Insula (\( \beta = 10.33; P=0.001; \text{HR}=3.1; 95\%CI=1.5-6.3 \)) and DS (\( \beta = 10.87; P=0.001; \text{HR}=2.8; 95\%CI=1.5-5.2 \)) predicts faster subsequent time to first drink after accounting for the role of clinical measures.

These findings indicate that CR can serve as potential marker to identify individuals at high-risk for relapse. Further, cue reactivity at insula may serve as a marker for treatment response with Baclofen.

56. Prevalence, Severity of Tobacco Use and Access to Tobacco Cessation among Psychiatric In-patients. Dr. Amol Badekar. Guides: Dr. Prabhat Kumar Chand, Dr. Pratima Murthy, Dr. Priyamvada Sharma

Tobacco use is a leading preventable cause of poor health and premature mortality. Data is needed to inform public policy and clinical practice, and to guide tobacco control efforts among men and women in psychiatric in-patient population. The aim of the study was to explore prevalence, severity of tobacco use and access to tobacco cessation among patients admitted to the psychiatric in-patient facility of NIMHANS. Major findings of this study include:

(i) Rate of tobacco use across the entire sample indicate that 34% of psychiatric inpatients use tobacco products in at least one form
(ii) The study got approximately equal association between tobacco use in any form and two main psychiatric diagnostic groups, mood disorders (33.33%) and non-affective psychotic disorders (33.64%). Also patients with severe mental illness had higher reporting of tobacco use (approx. 33%) compared to common mental disorders (25.58%).

(iii) Comparison of access to tobacco cessation in users of different forms of tobacco revealed that only 50% of smokers, 33.3% of smokeless tobacco users and 36.4 % users of both forms of tobacco were asked assessed and advised about tobacco use. Whereas only 16.2% of smokers, 5.6% of smokeless tobacco users and 7.6 % users of both forms of tobacco were provided with NRT’s or anti-craving medications or discussed about tobacco use in follow-ups.
57. Short term outcome of intensive residential treatment for obsessive compulsive disorder. Dr. Madhuri HN. Guides: Dr. A Shyam Sundar, Dr. YC Janardhan Reddy, Dr. Janardhanan CN

Forty-five consecutive patients (male N = 25 and female N = 20), admitted for treatment of OCD in a tertiary care centre were evaluated at admission, at the time of discharge and two months post-discharge. They were systematically evaluated for psychiatric diagnosis, personality disorders, obsessive beliefs, insight into obsessions and severity of obsessive-compulsive, depressive and anxiety symptoms with standard psychometric measures. All patients received comprehensive treatment consisting of a combination of pharmacotherapy and intensive supervised cognitive-behavior therapy (CBT). The response was defined as ≥ 35% reduction in the Yale-Brown Obsessive-Compulsive Scale (YBOCS) score from baseline and a rating of 1 or 2 on the Clinical Global Impressions-Improvement Scale.

The participants had severe illness with a mean YBOCS score of 29.17(±5.30) and a mean duration of illness of 12.02(±9.93) years at the time of admission. The mean duration of in-patient care was 6.84 (±3.98) weeks and they received on average 29.2 (±15.2) CBT sessions during the hospital stay. Thirty participants (67%) met the criteria for response with a median reduction of YBOCS score of 41.66% (IQR= 26.76 -64.81) at discharge and 43.84% (IQR =24.14-71.91) at 2- months post-discharge. Non-response to pharmacotherapy in the past (p=0.049) and poor insight (p = 0.033) as measured by Brown assessment of beliefs scale predicted poor response to treatment in logistic regression.

Residential treatment is an effective treatment for severe and chronic OCD. It can be considered before invasive treatment procedures.

58. Prodome of mania in youth with bipolar disorder Type - I an exploratory study. Dr. Lavanya P Sharma. Guides: Dr. YC Janardhan Reddy, Dr. Shoba Srinath

The aim of the study was to retrospectively characterize subsyndromal symptoms preceding first manic episode, utilizing the Bipolar Prodrome Symptom Scale–Retrospective (BPSS-R), and compare this with prodromes described in the literature.

Cross-sectional descriptive study with 32 youngsters aged ≥ 20 years or less. They were assessed within six months of remission. 90.6% reported at least one significant prodromal symptom. 71.9% reported at least 3 significant symptoms, which were identified commonly by family members (97%), school/workplace (29%). Mean prodromal duration was 5.7 months, a contrast from longer prodromes in the literature. Commonest symptoms were mood lability, oppositionality, irritability/anger, concentration, memory disturbances, and functional decline.

The study substantiates the need for systematic assessment of prodromal symptoms, which may otherwise be missed, and the importance of close monitoring in high-risk youngsters presenting with new-onset, fluctuating symptoms.

59. Insulin resistance in Alzheimer’s dementia. Dr. Sreelakshmi Thankappan. Guides: Dr. Srikala Bharath, Dr. Sarada Subramanian, Dr. Prerti Sinha, Dr. Meera Purushottam.

The results from this study indicated that among the AD the insulin levels were correlated to the severity of dementia, poor cognitive functions, and poorer activities of daily life, higher body mass index and increasing waist circumference. The prevalence of obesity, features of insulin resistance, diabetes and hypertension, were higher in the AD population. Prolonged, uncontrolled comorbidities appear to increase the risk of dementia. Restoration of insulin responsiveness and use of insulin therapy can lead to improved cognitive performance.

60. An exploratory study of resting state brain functional connectivity and its association with S100B in major depression. Dr. Venkata Lakshmi Narasimha. Guides: Dr. John P John, Dr. Sarada Subramanian

This exploratory study of resting state brain functional connectivity and its association with S100B in patients with major depression suggests that altered connectivity in Default Mode Network may not be seen in drug naïve patients with recent onset mild- moderate major depressive disorder.

Psychiatric Rehabilitation

1. Student expectation and feedback regarding teaching/ training programme in Psychiatric rehabilitation in Psychiatric Rehabilitation Services, NIMHANS. Investigators: T Sivakumar, Dr. SK Chaturvedi, Dr. Jagadisha Thirthalli, Dr. Devvarta Kumar, Dr. Poornima Bhola, Dr. Sailaxmi Gandhi, Dr. Aarti Jagannathan, Dr. Krishna Prasad, Dr. Haresh Angothu, Dr. Abhishek Pathak, Dr. James JW

Psychiatric Rehabilitation Services has introduced a unique teaching programme which consists of clinical rounds, didactic lectures, seminars, case conferences, research forum, debates, book reviews, documentary reviews, caregivers programs, NGO visits, family recreation activity, and volunteers programme. The investigators have been collecting informal feedback and fine tuning the teaching programme. In the proposed study, the investigators would formally collect student expectations from the teaching/training programme in psychiatric rehabilitation at the
beginning of the posting. After the end of the posting, feedback would be collected regarding teaching/training in Psychiatric Rehabilitation.

2. A naturalistic study of clinical and socio-demographic characteristics of patients attending psychiatric rehabilitation services for rehabilitation. Investigators: Dr. T Sivakumar, Dr. SK Chaturvedi, Dr. Jagadisha Thirthalli, Dr. Nirmala BP, Dr. Poornima Bhola, Dr. Geetha Desai, Dr. Sailaxmi Gandhi, Dr. Naveen Kumar C, Dr. Waghmare A, Dr. Udgiri S.

Assessment of factors affecting psychiatric rehabilitation is necessary to plan services and frame policies conducive to recovery of persons with psychiatric disorders. There is a paucity of studies examining factors affecting psychiatric rehabilitation in the Indian setup. NIMHANS runs a unique psychiatric rehabilitation services for patients with psychiatric disorders. The investigators would study the clinical and socio-demographic profile of patients attending psychiatric rehabilitation services and factors influencing rehabilitation. The study would help us understand rehabilitation needs in persons with psychiatric disorders and factors influencing rehabilitation in our setup. The services can be tuned to address felt needs and barriers interfering with successful rehabilitation. The experience can help us make policies and programs which can be used across the country. This will help in reintegration of patients with psychiatric disability with mainstream society.

3. Community based rehabilitation for persons with severe mental illness in a rural area of South India. Investigators: Dr. T Sivakumar, Dr. Jagadisha Thirthalli, Dr. Naveen Kumar C (NIMHANS Intramural Funding/Grant)

World Health Organization (WHO) promotes CBR as a strategy to improve access to rehabilitation services for Persons with disabilities (PwD) in LAMICs. WHO has developed a CBR matrix which consists of five key components: health, education, livelihood, social and empowerment. The CBR programme can select components and elements in CBR matrix which best meet their local needs, priorities and resources. The CBR guidelines are relevant to all PwD including persons with mental illness.

In partnership with Association of people with disability (APD), the feasibility of implementing a CBR project for persons with severe mental illness (SMI) with existing network of community and government systems is being studied at Jagaluru Taluk, Davangere district.

4. Disability and Rehabilitation Needs of Patients with Severe Mental Disorders and Mental Retardation: A study in Karnataka. Investigators: Dr. Naveen Kumar C, Dr. G Radhakrishnan

Psychiatric Social Work

1. Status of persons with chronic mental illness placed in rehabilitation homes from a tertiary care mental health setting. Investigators: Dr. E Aravind Raj, Dr. K Sekar, Dr. Sanjeev Jain (NIMHANS Intramural Funding/Grant)

2. Community based disaster preparedness program. (NIMHANS-World Vision collaborative project). Investigators: Dr. E Aravind Raj, Dr. K Sekar (Funding by World Vision)

3. Development of manual on Psychosocial Care in Disaster Management. (NIMHANS-Caritas India collaborative project). Investigators: Dr. E Aravind Raj, Dr. K Sekar (Funding by Caritas India)

4. Psychosocial care in disaster management (Training of Trainers Workshop. Investigators: Dr. K Sekar, Dr. E Aravind Raj, Dr. Jayakumar C (Funding by Emergency Medical Relief, DGHS, MH&FW)

5. Awareness among rural population about the stigma, causes and treatment of mental health problems through street play programs. Investigators: Dr. E Aravind Raj, Dr. K Sekar (Funding by RN Moorthy Foundation)

6. Family burden and quality of life in children and adults with mitochondrial disorders. Investigators: Dr. Priya Treesa Thomas, Dr. PS Bindu, Madhu Nagappa, Dr. AB Taly (NIMHANS Intramural Funding/Grant)

7. Adolescents with epilepsy: Development of a family intervention. Investigators: Dr. Priya Treesa Thomas, Dr. Raghavendra, Dr. Ravindranath Chowdary, Dr. Sanjib Sinha (Funding by ICSSR)

8. Explanatory model of common mental disorders among women attending Primary Health Centers in Rural India. Investigators: Dr. Shishir Kumar, Nitte University, Mangalore, Dr. Anish Cherian (Funding by ICSSR)

9. Partners in care, experience and needs of persons with obsessive compulsive disorder. Investigators: Dr. Ameer Hamza, Mr. Srinivas

10. Development and feasibility of a vocational rehabilitation programme for persons with mental illness. Investigators: Dr. Aarti Jagannathan, Dr. G Radhakrishnan
11. Prevention of Youth Suicide: Development of a Comprehensive Youth Suicide Prevention Model for School Teachers. Investigators: Dr. Vranda MN, Dr. Meena KS (Funding by ICMR)

Suicide is one of the major causes of death among adolescents worldwide and evidence suggests that the number of adolescent’s committing suicide has drastically increased over the years. Given the alarming increase in rate of suicide, preventing youth suicide has become an issue of paramount importance with the focus on primary prevention. Most of the suicide among the youth can be preventable with early identification and intervention by the school staffs especially teachers as they have the greatest access to the students over the longest period of time where students spend one third of their day in schools. Teacher’s role in identifying and assisting high risk students depends on their ability to recognize and respond appropriately to the situation. The study is directed towards understanding the knowledge, attitude and training needs of teachers in prevention of suicide and also preparing a comprehensive youth suicide prevention model and guidelines for school teachers.

12. Issues and concerns of patients and their caregivers of Guillian Barre syndrome. Investigators: Dr. BP Nirmala, Dr. Anupam Gupta, Dr. Meeka Khanna, Dr. Rashmi, Dr. AB Taly

The study aims at developing and standardizing comprehensive psychosocial care manual for Children and Adolescents Infected with HIV/AIDS. As part of the project, need assessment was conducted with children infected with HIV, their parents, specialists of ART centres, specialists of ART centres, policy makers, counselors, community care providers and NGOs staffs. Based on the information collected through the KIIs, FGDs, and triangulation with existing literature and peer review of the outcomes with experts working in this area, a comprehensive manual on “Psychosocial Care and Support for Children and Adolescents Living with HIV” was prepared in English. Apart from this, two supportive HIV disclosure booklets entitled “Keeping Healthy and Strong” for the age group of 05-11 years old children and “Knowing about Myself” for the age group of 12-16 years old adolescents to facilitative disclosure process using the parents/caregivers HIV infected children and adolescents were prepared. The two booklets provide developmentally appropriate disclosure information to the children and adolescents living with HIV/AIDS

13. Psychosocial Care for Children Infected with HIV/AIDS. Investigators: Dr. Vranda MN, Dr. D Subbukrishnan, Dr. Jayashree Ramakrishna (Funding by ICSSR)

The study aims at developing and standardizing comprehensive psychosocial care manual for Children and Adolescents Infected with HIV/AIDS. As part of the project, need assessment was conducted with children infected with HIV, their parents, specialists of ART centres, specialists of ART centres, policy makers, counselors, community care providers and NGOs staffs. Based on the information collected through the KIIs, FGDs, and triangulation with existing literature and peer review of the outcomes with experts working in this area, a comprehensive manual on “Psychosocial Care and Support for Children and Adolescents Living with HIV” was prepared in English. Apart from this, two supportive HIV disclosure booklets entitled “Keeping Healthy and Strong” for the age group of 05-11 years old children and “Knowing about Myself” for the age group of 12-16 years old adolescents to facilitative disclosure process using the parents/caregivers HIV infected children and adolescents were prepared. The two booklets provide developmentally appropriate disclosure information to the children and adolescents living with HIV/AIDS

14. Psychosocial correlates of domestic violence among women with mental illness, mental health professionals’ knowledge, attitude and preparedness to respond to Domestic Violence. Investigators: Dr. Vranda MN, Dr. Naveen Kumar C, Dr. PT Sivakumar, Dr. N Janardhana, Dr. D Muralidhar (NIMHANS Intramural Funding/Grant)

15. Developing psychosocial preparedness through Community Based Support (CBS) in India. Investigators: Dr. K Sekar, Dr. Jayakumar (Funding by UNDP – USAID)

The study aims at development and standardization of a scale to measure psychosocial wellbeing of children which will be applicable for children between the age group of 8 and 13 years and can be used in varied situations ranging from normal situations to difficult circumstances. The scale will be subjected to varied reliability and validity measures. The scale has been prepared and tested with children in the school testing. The analysis is ongoing.

16. Development and standardization of scale to measure psychosocial wellbeing of children. Investigators: Dr. Kavita Jangam, Dr. K Sekar, Dr. E Aravind Raj (Funding by ICSSR)

The study aims at development and standardization of a scale to measure psychosocial wellbeing of children which will be applicable for children between the age group of 8 and 13 years and can be used in varied situations ranging from normal situations to difficult circumstances. The scale will be subjected to varied reliability and validity measures. The scale has been prepared and tested with children in the school testing. The analysis is ongoing.

17. A longitudinal follow up study of children and adolescents who underwent assessment and intervention for reported child sexual abuse. Investigators: Dr. Kavita Jangam, Dr. Girimaji, Dr. Shekhar Seshadri, Dr. Shobha Srinath, Dr. Preeti Jacob, Dr. John Vijay Sagar

18. Sexuality and reproductive health of adolescents with disabilities: An intervention study. Investigators: Dr. N Janardhana, Dr. D Muralidhar, Dr. Ameer Hamza, Dr. John Vijay Sagar, Dr. Uma H

19. Identification of psycho social needs and rehabilitation of survivors of Child Sexual Abuse. Investigators: Dr. N Janardhana, Dr. D Muralidhar, Dr. Vranda MN, Dr. Ameer Hamza, Dr. Uma H, Dr. John Vijaya Sagar (Funding by ICMR)

The research study would focus on identifying psycho-social needs and available mechanisms of rehabilitation for victims of child sexual abuse and to recommend strategies and programme intervention for addressing them. The study would help in understanding the risks and protective factors among survivors of CSA and existing policies and programmes for rehabilitation. It would also help in recommending a strategy to implement the common mental health programme and have implications for child friendly procedures which can be followed while dealing with cases of child sexual abuse by investigating authorities.

20. Psychosocial interventions for children in difficult circumstances under care and protection of child welfare committee Bangalore. Investigators: Dr. N Janardhana, Dr.
BP Nirmala, Dr. N Krishna Reddy, Dr. Ameer Hamza, Dr. Uma H, Dr. Roopesh, Dr. John Vijaya Sagar (Funding by Dept. of Women and Child Development, Govt. Karnataka)

The main aim of the project is to provide psycho social interventions for children under care and protection and counseling training for counselors. This particular project is funded by Karnataka State Integrated Child Protection Society, Dept. of Women and Child Development, Govt. of Karnataka. Through this project psycho social interventions are being provided to children at Government Homes and those who come for care and protection through child welfare committee. Preventive and promotive mental health activities are being carried out in various institutions. Children who are in need of curative treatment are being referred to Child and Adolescent Psychiatry OPD. Supervision and handholding support is ongoing for counselors working at Government Children Homes.

21. Family perspectives on romantic relationship among adolescent girls under care and protection of child welfare committee. Investigators: Dr. N Janardhana, Dr. Uma H, Dr. John Vijay Sagar, Dr. BP Nirmala

The research project has been undertaken to understand the socio-demographic and profile of the family members of adolescents in relationship; understand the family members’ opinion towards romantic relationship among adolescent girls; study the expectations among family members from adolescent girls in romantic relationship; understand the factors associated with family members accepting/rejecting adolescent girls in romantic relationship; understand the strategies used by family members to address the issues associated with romantic relationship among adolescent girls. The research study would help in developing explanatory model of family members regarding and care and protection issues among adolescent girls. Descriptive research design will be used for the study with mixed methods of both qualitative and quantitative. Family members of adolescent girls under care and protection of CWC will be approached to participate in the study.

22. Testing of self help yoga manual for indian caregivers of persons with schizophrenia living in the community: A single blind randomized controlled study. Investigators: Dr. Jagannathan A, Dr. Hamza A, Dr. Thirthalli J, Dr. Varambally S, Dr. Nagendra HR (Funding by ICMR)

23. Feasibility testing of employment programme on work performance of persons with mental illness who are under regular treatment. Investigators: Dr. Aarti Jagannathan, Dr. Naveen Kumar C, Dr. Jagadisha T, Dr. Devrata Kumar, Dr. Poornima Bholu, Dr. Krishna Prasad, Dr. Sivakumar T, Dr. Radhakrishnan, Dr. Hareesh A, Dr. Deepak Jayarajan. (Funding by Ministry of Social Justice and Empowerment)

24. Need for self-help groups among women family caregivers of persons with mental disability in rural Karnataka. Investigators: Dr. Aarti Jagannathan, Dr. Naveen Kumar C, Dr. Jagadisha T

Survey of 198 households in Konandur Taluk of Thirthalli District was conducted, out of which a total of 11 clients with mental illness. Out of them, 8 clients had women caregivers on whom the study was conducted. One-time assessment of their need for SHG’s, perceived social support and disability levels of the clients were assessed. Data analysis is ongoing.

25. Feasibility and pilot testing of Virtual-Yoga sessions for individuals with mental health disorders in the community. Investigators: Dr. Aarti Jagannathan, Dr. Satyaprabha M, Dr. ShivaramaVarambally, Dr. Prabha Chandra

26. Psychosocial care for children in conflict with law. Investigators: Dr. K Sekar, Dr. Kavita Jangam, Dr. Preeti Jacob (Funding by Social Justice Department, Government of Kerala)

27. Development of evidence based lay health worker delivered psycho-social intervention module for women with common mental disorders in rural India: A population based study. Investigator: Dr. Anish V Cherian (Funding by DST and Public Health Foundation of India)

28. Development of peer delivered psycho-social intervention module for women caregivers of people with HIV/AIDS. Investigators: Dr. Anish V Cherian, Dr. Shrinivasa Bhat (Funding by ICMR)

29. Improving referral rates to local health care services for people with mental illness through ‘ASHAs training’ program. Investigators: Dr. Anish V Cherian, Dr. Shrinivasa Bhat U, Dr. Santosh Prabhu, Dr. Krishna Vaddipatri, Prof. Linda B Cottler, Prof. Graham Thornicroft (Funding by Fogarty International USA)

30. Quality of life and concept of ‘wellbeing’ among women living with HIV in rural and semi-urban India. Investigators: Dr. Shrinivasa Bhat U, Nitte University, Mangalore, Dr. Anish V Cherian, Dr. Satheesh Rao (Funding by ICSSR)

31. Explanatory model of common mental disorders among women attending Primary Health Centers in Rural India. Dr. Shishir Kumar, Nitte University, Mangalore, Dr. Anish Cherian (Funding by ICSSR)

32. Effectiveness of community-based, volunteer-driven, early intervention package of care for psychosis in rural India. Investigators: Dr. Manoj Kumar, Mental Health Action
33. Effectiveness of a peer-delivered psycho-social intervention for women caregivers of people living with HIV: Randomized controlled trial. Investigators: Dr. R Dhanasekara Pandian, Dr. Anish V Cherian, Dr. Shrinivasa Bhat, Dr. Santosh Prabhu, Dr. Shishir Kumar, Dr. Praveen A, Dr. Agnieta Aiman (Funding by ICSSR)

The aim of the study is to develop a need based psycho-social intervention package and to examine the feasibility of intensive case management as an adjunct to routine treatment for persons with severe alcohol dependence (i.e. Delirium Tremens, DT). Literature on psycho social interventions for persons with DT in India is scarce. This study will add to the body of knowledge and also help in developing a framework that will assist mental health professionals while working with this vulnerable population as well as their care givers in engaging them in treatment, resulting in better quality of life.

34. Counsellors training programme on delivering Psycho-social Intervention Module for common mental disorders among women living with HIV/AIDS. Investigators: Dr. R Dhanasekara Pandian, Dr. Suresh Bada Math, Dr. Anish V Cherian, Dr. Naveen Kumar C, Dr. Veena Satyanarayana, Dr. R Ravikumar, Dr. Nitin Anand, Mr. Soyuz John (Funding by National Rural Health Mission, Govt. of Karnataka)


The aim of the study is to develop a need based psycho-social intervention package and to examine the feasibility of intensive case management as an adjunct to routine treatment for persons with severe alcohol dependence (i.e. Delirium Tremens, DT). Literature on psycho social interventions for persons with DT in India is scarce. This study will add to the body of knowledge and also help in developing a framework that will assist mental health professionals while working with this vulnerable population as well as their care givers in engaging them in treatment, resulting in better quality of life.

36. A study on knowledge and attitude of health care providers regarding suicide prevention. Ms. Febna Moorkath. Guide: Dr. MN Vranda (Funding by UGC-JRF)

The study aimed at understanding knowledge, attitude and training needs of the health care providers regarding suicide prevention. Twelve in-depth interviews were conducted among Health care providers working in the primary health care setup both the public and private sectors in Urban Bangalore, Karnataka. A qualitative research design was adopted. Data was analysed using thematic analysis approach. This study reveals that the health care providers those who are working in the primary health care set up, having inadequate knowledge about the causation of suicide, warning signs, risk and protective factors of suicide and also identified lack of assessment and prevention strategies in the primary health care set up. The study also highlights absence of definite protocols to address people with suicidal ideas and domination of myths related to the suicide in the primary health care practice. In the attitude aspect, health care providers are more negativistic regarding the suicidal act and having moralistic attitude towards help and recovery perspective. This study also reveals absence of academic importance of assessment and psycho-social management of suicidal act in the medical education and lack of training in the primary health care set up. Viewing suicide as a public health issue it is very important to relate with the primary health care set up where, people directly coming, approaching and being in contact with the health care system. The study indicates the need of sharing focus to psycho-social aspect with the medical management of the suicidal behavior and also highlights the importance of risk assessment of suicidal behavior in the primary health care setup.

37. Experiences and needs of adolescent children living with a parent with mental illness. Ms. Divya Ballal. Guides: Dr. N Janardhana, Dr. Prabha S Chandra (Funding by UGC-JRF)

Children of parents with mental illness have been identified as a vulnerable population. This study aims to investigate the subjective experiences and needs of adolescent children, aged 15-19 years, living with a parent with a psychotic illness, using a qualitative methodology. The proposed outcome of the study is a theoretical perspective to understand the subjective experiences of adolescent children living with a parent with mental illness, a checklist to identify their experiences, and a theoretical intervention, based on the identified needs.

38. Efficacy of group intervention module for adolescent girls on self-awareness. Ms. Jasmine Mary John. Guides: Dr. N Janardhana, Dr. HR Nagendra (Funding by ICMR-JRF)

Self-awareness is having a clear perception of one’s personality, including strengths, weaknesses, thoughts, beliefs, motivation and emotions. The aim of the study is to develop a mental health promotion module for adolescent girls on self-awareness and test its efficacy among adolescent girls. The study adopts experimental research design with control and experimental groups. A module has been developed based on body focused meditation, and using mental health promotional aspects. Intervention has been provided to the school going adolescents and post assessment needs to be carried out to test its efficacy.

39. Life experiences, quality of life, well-being and future strategies of older transgender individuals. Ms. Alphonsa George. Guides: Dr. N Janardhana, Dr. D Muralidhar (Funding by ICMR –JRF)

Transgender individuals face a great deal of stigma and discrimination in their day to day life, in all fields of their personal as well as social living, such as family life, education, employment, human rights, and so many of the kind. The literature mostly speaks about the transgender
individuals in general and it covers transgender individuals of all age groups. Looking in depth into the literature the studies concerning the older transgender individuals are more or less absent, especially in the indigenous literature. The aim and objectives of the study were to find out the socio demographic profile, life experiences, factors associated with acceptance or non-acceptance by family/ members or partners, coping measures, quality of life, well-being, and future strategies of older transgender individuals who are 40 years of age and above, and to develop a social work intervention model for the transgender community based on the experiences of the experienced transgender individuals. The analysis of the quantitative variable showed a moderate to good level of quality of life and well-being of the respondents. The qualitative results were analyzed using thematic analysis procedures. The results were explained under themes and sub themes, according to the objectives and the variables.

40. Psycho-social profile of adolescent girls in romantic relationship under care and protection of CWC. Ms. Manjula B. Guides: Dr. BP Nirmala, Dr. N Janardhana (Funding by Karnataka State Integrated Child Protection Society)

The aim of the study is to study the psycho-social profile adolescent girls in romantic relationship under care and protection of CWC. It is also intended to develop a theoretical framework for intervention of adolescent girls in romantic relationship under care and protection. Descriptive research design with mixed methods (both quantitative and qualitative) will be adopted for the study. In the quantitative phase psycho-social profile of the participants will be studied with regard to their attachment styles, temperament, attitudes and values on sexuality, family functioning. Qualitative part of the study will focus on adolescent girl’s perception about romantic relationship, attribution, expectations, cognitive and emotional processes of romantic relationship and their views on factors associated with care and protection issues.

Research studies on adolescent romantic relationships showed that they have significant impact at individual, family level and especially on mental health of adolescents. Hence, the study will help in understanding the psycho-social aspects of adolescent girls in romantic relationships and developing culture specific explanatory model of romantic relationships.

The present study has implications for both therapeutic interventions for this group and further research in the area.

41. Impact of psychiatric social work intervention on expressed emotion and knowledge among caregivers of persons with schizophrenia. Mr. Kannappa Setty. Guides: Dr. N Janardhana, Dr. Suresh Badamath, Dr. P Marimuthu

Schizophrenia is a chronic mental disorder that leads to various psycho-social problems in family members. In addition, the family environment also causes several psycho-social problems, such as high expressed emotion. Aim of the study is to evaluate the efficacy of Psychiatric Social Work intervention on expressed emotion and knowledge in caregivers of persons with Schizophrenia. Ten-day PSW intervention was administered to 80 caregivers of persons with schizophrenia. Findings show that there is significant change in the knowledge level of the caregivers and reduction in high expressed emotion. It can be concluded that the standardized PSW intervention found to be acceptable among the caregivers of persons with schizophrenia in India.

42. Perception of parenting style among young adults. Ms. Sukanya Rajan. Guides: Dr. N Janardhana, Dr. D Muralidhar, Dr. Mariamma Philip (Funding by UGC-JRF)

The aim of the study is to construct and validate a scale among the young adults regarding their perception about the parenting style. The goal will be to examine the perception of parenting style differ as a function of culture, gender or gender of the parent. The literature review revealed that there are very few measures to examine parenting styles. There is a need for initiating measures to construct a scale based on Baumrinds classification among the young adults. Provided that most of the parenting styles scales were constructed by the Western authors and represent their own cultural ideals and norms of child rearing; for instance, manipulation of contextual factors (e.g., training, education, obedience, family relatedness, religion, etc.) has not been addressed in extant measures that were developed in the West. These scales do not represent the norms adhered by the parents in India. Western societies are highly individualistic in which personal goals and needs are preferred over the concern for others and emphasis is mostly laid on me (Oyserman & Lee, 2008). The development of indigenous tool of parenting has its implications, bearing in mind the various conceptual and contextual issues supportive in parenting (e.g., religion, deep-rooted traditions, training, modesty, group cohesion, and social hierarchy).

43. Family of origin’s role and personality on couple seeking marital therapy: An exploratory study. Ms. Silpa Vishwanath. Guides: Dr. N Janardhana, Dr. D Muralidhar (Funding by UGC- JRF)

The aim of the study is to understand family of origin’s role and personality on couple’s relationship with regard to marital adjustment and marital stability. Exploratory research design will be used for this study and mixed methodology will be adopted. Couples seeking therapy from NIMHANS Family Psychiatry Center would be considered as the universe and consecutive sampling method will be used. Written informed consent will be taken from each participant. Tools for data collection will include socio-demographic questionnaire, interview guide, family of origin scale, big-five inventory test, revised dyadic adjustment scale and marital status inventory. Data will be collected from the couples who come to family psychiatry center. A separate
44. Development and evaluation of a psychosocial intervention for women with substance dependence. Ms. Reni Thomas. Guides: Dr. R Dhanasekara Pandian, Dr. Pratima Murthy

Research studies indicate that clinical services for addiction treatment that address gender specific issues are more effective for women than traditional programs, originally designed for men. However, there are very few studies from India which assess the treatment needs and concerns of women with SUDs. The current study aims to develop and evaluate a psychosocial intervention for women with substance dependence by adopting a quasi-experimental research design. Thirty three samples from NIMHANS have been recruited by using consecutive sampling with objectives to explore the psychosocial risk factors, treatment needs and concerns, develop and evaluate the need based psychosocial intervention for women with substance dependence.

45. Home environment, psychological health and psychosocial competencies of adolescent children of parents with alcohol dependence syndrome. Mr. Mutharaju A. Guides: Dr. R Dhanasekara Pandian, Dr. Vivek Benegal

Adolescents account for more than one-fifth of the world's population. Adolescence is a period of stress and storm that makes them face many challenges in their life. Many research studies found that children of parents with alcohol dependence syndrome tend to have significant bio-psycho-social issues in their life. The present study is assessing home environment, psychological health and psychosocial competencies of adolescent children of parents with alcohol dependence syndrome. The findings of the present study would enable the social work profession to understand the associated risk factors and to initiate the process of providing appropriate psychosocial interventions.

46. School based social work intervention for healthy lifestyle of adolescents. Mr. Soyuz John. Guides: Dr. R Dhanasekara Pandian, Dr. E Aravind Raj (Funding by UGC-JRF)

Adolescence is a period of vulnerability. Health related behaviours during this period will determine the current and future health of this group. Health cognition is one of the factors affecting the health related behaviours. The current research aims at developing an intervention package and testing its effectiveness on the health cognition of adolescents in promoting their health related behaviours.

47. Personal meaning of recovery among persons with Schizophrenia. Ms. Shari Tess Mathew. Guides: Dr. BP Nirmala, Dr. K John Vijay Sagar, (Funding by UGC/SRF)

48. Treatment adherence enhancement interventions for person with bipolar affective disorder. Mr. G Ragesh. Guides: Dr. Ameer Hamza, Dr. Santosh K Chaturvedi

49. Efficacy of family centered psychiatric social work interventions for persons with first episode psychosis: A randomized controlled trial. Ms. Udagiri Swaroopa. Guides: Dr. BP Nirmala, Dr. Jagadisha Thirthalli

A FEP usually occurs in adolescence/ early adulthood. 3/100 people worldwide will experience at least one psychotic episode during their lifetime. The study aims to assess the efficacy of Family Centered Psychiatric Social Work Intervention (FCPSWI) for persons with first episode psychosis (PwFEP). An extensive review of literature will be conducted to identify important needs of PwFEP and caregivers, followed by package development. This will be followed by a randomized control trial with intervention and treatment as usual groups. Caregivers of PwFEP were recruited adhering to the eligibility criteria and after obtaining informed consent.

50. Efficacy of psychosocial intervention with siblings of persons with Schizophrenia. Mr. Amaresh. Guides: Dr. D Muralidhar, Dr. DK Subbakrishna

Schizophrenia is a complex disorder characterized by positive symptoms such as hallucinations and delusions; negative symptoms such as affective flattening, alogia, avolition, anhedonia and apathy, and cognitive deficits. The chronicity and the other illness related effects of schizophrenia pose a significant burden on persons suffering from this illness as well as their families. Literature shows that the family caregivers in India play an important role in the treatment and recovery of the person with severe mental illness, since a majority of the patients live with their families. Though schizophrenia affects the whole family, research predominantly identifies the issues of parents and spouses of the patients and a major proportion of participants in psychosocial interventions on caregivers are from these two groups. The studies on siblings of persons with schizophrenia (SOPS) show that they are also negatively affected by the illness and have suggested that there is a need for psychosocial. Some of the researchers have argued that SOPS are also important members in the treatment during their siblings' illness trajectory especially when other caregivers are not. In this context it is also necessary to acknowledge their contributions to the recovery of their ill siblings and address their needs. In addition several reviews have established that SOPS are at a high-risk of mental illness. Thus, understanding their specific needs and developing the psychosocial interventions to meet their issues is the need of the hour.

51. Efficacy of psychiatric social work intervention as add-on measure in enhancing insight among persons with first episode Schizophrenia. Mr. Boban Joseph. Guides: Dr. D Muralidhar, Dr. Shivarama Varambally, Dr. Devvarta Kumar
Research studies have estimated that majority of persons affected with schizophrenia have poor insight into their illness. Better insight helps in the recovery of person from schizophrenia. Psychiatric social workers are involved with persons with schizophrenia and their caregivers from their first contact with mental health setting. A classical experimental design with control and treatment groups and rater blinding method will be adopted for the study.

52. Effectiveness of lifestyle modification for metabolic syndrome in persons with severe mental illness. Mr. Vinit Kumar Singh. Guides: Dr. D Muralidhar, Dr. Muralidharan K

Severe mental disorders like bipolar affective disorder, schizophrenia, and major depressive disorder have higher risk of metabolic syndrome (also known as syndrome X) and that leads to excessive mortality of these patients mainly due to physical illness. Many studies have found that metabolic syndrome is 2-3 times more common in persons with bipolar affective disorder, schizophrenia, and major depressive disorder as compared to general population. In recent years the importance of physical health in persons with severe mental illness has become increasingly recognized by the medical community. Lifestyle interventions like weight management by physical exercise, healthy dietary practices, smoking cessation, etc., can bolster effective management of metabolic syndromes. For this study a lifestyle intervention package will be developed on the basis of literature review and package will be face and content validated by discussion with 5 experts from different fields. Baseline assessment will be done before intervention and two post assessments will be carried out after one month and three months of invention respectively.

53. Development of psycho-social intervention for suicide prevention among transgender persons. Mr. Virupaksha. Guides: Dr. D Muralidhar, Dr. Shivarama Varambally, Dr. Devvarta Kumar

Suicide rate and suicidal tendencies among transgender community have been reported to be high compared to general population. Hence, there is a dire need for the mental health professionals to study the phenomenon thoroughly and draw appropriate interventions.

Descriptive research methodology and qualitative methods will be adopted for the study, which will be conducted in the metropolitan city, Bengaluru with the help of Non-Government Organizations working for transgender community.

**NEUROSCIENCES**

**Clinical Neurosciences**

1. Autism spectrum disorders–Role of oxytocin and neuroimaging analysis. Dr. Sowmyashree. Guides: Prof. Shoba Srinath, Prof. Satish Chandra Girimaji, Dr. Rose Dawn Bharath (Funding by TVS Foundation, Student Bursary)

The study involves estimation of oxytocin levels in blood and salivary samples of children with ASD and salivary samples from their mothers. The objective of the study is to find structural and metabolite abnormalities in the brain, focusing on anterior cingulate cortex, and look for correlation with oxytocin levels. The investigators will also look into the correlation of the neurodevelopmental factors and neuropsychiatric symptoms, severity of the disease and comorbidities with the oxytocin levels and imaging findings.

2. A study of vitamin D and its association with immune function in autism spectrum disorders. Dr. Salah Basheer. Guides: Dr. Satish Girimaji, Dr. Shoba Srinath, Dr. V Ravi, Dr. Rita Christopher (Funding by TVS Foundation, Student Bursary)

The study aims to look into the role of Vitamin D in the Autism Spectrum Disorder (ASD) as well as its association with immune function in ASD. Vitamin D and immune markers will be estimated from blood of 50 children with ASD and matched 30 typically developing healthy children. Sample collection and blood analysis is completed. The statistical analysis is ongoing.

3. Exploring subclinical cerebellar dysfunction in patients with essential tremor, primary writing tremor and writer’s cramp by quantitative characterization of ocular movements and eye-hand coordination and advanced neuroimaging techniques. Dr. Ketan Jhunjhunwala. Guides: Dr. Pramod Kumar Pal, Dr. AK Gupta

4. Macro and microstructural video-polysomnographic signal analysis: sleep and epilepsy correlation. Dr. Chetan S Nayak. Guides: Dr. Sanjib Sinha, Dr. AB Taly, Dr. K Thennarasu, Dr. Kaushik Majumdar.

Patients with epilepsy (PWE) have several disturbances in sleep architecture that occur despite the absence of daytime-seizures and antiepileptic drugs (AEDs). This is suggestive of inherent sleep instability in the epileptic brain. Arousal instability during sleep not only contributes to sleep disorganization but also acts as a potential trigger to activate of epileptiform activity. Consequently, the occurrence of epileptiform activity during sleep can further hinder
sleep continuity and worsen arousal instability, causing a vicious cycle of poor sleep quality and intractable seizures. On the other hand, changes in the strength of cortical synchronization provides an overview regarding the nature of coupling in the brain during sleep and wake periods alongside the occurrence of inter-ictal epileptiform discharges (IEDs). The rise in cortical synchronization during seizure activity demonstrates an increased neuronal coupling in epileptic foci and is thought to be a manifestation of the perpetual synaptic remodeling occurring within these brain networks.

This study evaluates the macro and microstructural sleep characteristics of PWE, which are reliable biomarkers of sleep quality and arousal fluctuations in sleep, respectively. Further, the background electroencephalography (EEG) epochs and IEDs during wake and different stages of sleep in PWE and healthy controls as paradigms would be used to understand neo-cortical dynamics involved in synchronization during the various states of vigilance in neuronal ensembles.

5. Role of Renin-Angiotensin Aldosterone system in cognitive deterioration in patients with cerebral small vessel disease. Dr. Thomas Gregor Issac. Guides: Dr. SR Chandra, Dr. Rita Christopher, Dr. Jamuna, Dr. Mariamma

The Renin–Angiotensin–Aldosterone System (RAAS) is an important auto regulatory system maintaining blood pressure homeostasis. RAAS in cerebral small vessel disease, which is the most important cause of vascular dementia, and vascular depression have not yet been fully studied. The rationale behind this study is to identify the role of RAAS system in progression of benign SVD to vascular dementia as almost 94% of the healthy population above 60 years of age have cerebral small vessel changes in MR imaging while only one third of them progress into cognitive decline. This was previously classified as benign lesions. However, as the lesion load increases, more so in people with hypertension, diabetes, smoking and alcoholism there is proportionately an exponential rise in cognitive decline as well as the development of focal neurological deficits affecting the gait, behavior, cognition as well as executive functions. Almost 1 out of every 4 Indians is suspected to have this condition which is normally disregarded as due to normal ageing. The objectives of the study are to characterize the phenotypic aspects of this disease, to assess the gene polymorphisms in the pathway, to correlate with serum aldosterone levels and to determine the pattern of cognitive involvement in the illness. The levels of Aldosterone, ACE activity as well as the 5 polymorphisms described in RAAS axis will be studied and the cognitive deterioration will be assessed by appropriate neuropsychological tests prior and a year later.

6. Simultaneous EEG FMRI to study phase synchronization and functional connectivity in symptomatic localization related epilepsy. Dr. Ganne Chaitanya. Guides: Dr. Satish Chandra, Dr. Sanjib Sinha, Dr. Rose Dawn Bharath

7. Nuclear mitochondrial intergenomic communication disorders - a phenotypic, pathological, biochemical and genotypic study. Dr. Shwetha Chiplunkar. Guides: Dr. PS Bindu, Dr. AB Taly, Dr. Gayathri N, Dr. Meera Purushottam

Nuclear mitochondrial intergenomic communication disorders were studied in skeletal muscle tissue of 530 patients for mtDNA deletion and depletion based on Bernier’s clinical criteria. An average incidence of deletion/depletion of 10% was observed in the studied population highlighting that it is rare. Histopathology was negative in at least 15% patients and respiratory chain enzyme assays were normal in at least 10% patients despite having mtDNA deletion/depletion. Interestingly, though clinical exome sequencing (in 22% patients) identified causative nuclear gene mutations in 12% patients, 10% still remained negative. These results reiterate the need for multi-modal evaluation of mitochondrial disorders and also provide the much needed evidence to explore the genetic basis further.

A case of CPOE and POLG1(L304R) homogenous mutations showing ragged red fibers (A), COX deficient fibers (B) and multiple deletions

8. Epigenetic study in alcohol dependence. Dr. Soundarya. Guides: Dr. Pratima Murthy, Dr. Meera Purushottam, Dr. Arpna Agrawal

The objectives of study are to assess gene-environment interactions in chronic alcohol use and examine the DNA methylation and gene expression changes associated with chronic alcoholism and its interactions with one carbon metabolism genes. The study will focus on providing insight into epigenetic changes associated with chronic alcoholism and its association with relapse mechanisms.

9. Inhibition training and electrophysiology in alcohol use disorder. Dr. Mrunal Bandawar. Guides: Dr. Vivek Benegal, Prof. Matt Field, Dr. J Keshav Kumar, Dr. Paul Christianson (NIMHANS-Liverpool Dual PhD Programme)

The aim of the study is to develop a smartphone training game to improve inhibitory control in alcohol affected population, helping them to cut down drinking and improve clinical outcome in patients. The study would help in the process of providing answers to the
ambiguous questions about inhibitory control training influencing the alcoholism by use of experience sampling method with smartphones.

10. Neural oscillations as biomarkers of epileptogenic zone. Dr. Velmurugan J. Guides: Dr. Sinha S, Dr. P Satishchandra, Dr. Srikanth Nagaran

11. Identification of biomarkers for psychosis in Parkinson’s disease by advanced neuroimaging retinal imaging, neuropsychological profile and genetic polymorphism studies. Dr. Abhishek Lenka. Guides: Dr. Pramod K Pal, Dr. A Shyamsundar, Dr. Jitender Saini, Dr. Shantala Hegde, Dr. Rita Christopher

Parkinson’s disease (PD) is a progressive neurologic disorder characterized by tremor at rest, bradykinesia, postural instability and rigidity. Patients with PD may also develop non-motor symptoms. Psychosis is one of the debilitating non-motor symptoms of PD and is an independent risk factor for nursing home placements, caregiver burden and mortality in patients with PD. Hence identification of patients who are prone to develop psychosis is of paramount importance. This study aims at identifying such patients using a multimodal approach using advanced neuroimaging, retinal imaging using optical coherence tomography, genetic polymorphism studies (IL-6, COMT, HOMER1) and neuropsychological evaluations.

12. Clinical spectrum and immunobiology of Neuromyelitis optica. Dr. Harikrishna B. Guides: Dr. P Satishchandra, Dr. V Ravi, Dr. Nethravati, Dr. Manjunatha, Dr. Anita Mahadevan

The study attempts to evaluate the clinical spectrum, association of HLA type, and immunobiology of Neuromyelitis Optica Spectrum Disorders (NMOSD) in Indian setting. Enumeration of cells of the immune system is being performed by flow cytometry in peripheral blood mononuclear cells in patients, followed by functional characterization of various cells by staining for intracellular cytokines. Role of MAIT cells in NMO pathogenesis will be evaluated and determine if there are immunophenotypic differences between NMOSD and multiple sclerosis.

13. Exploratory study- In search of retinal neurovascular unit markers in AD. Dr. Ravi Teja. Guides: Dr. Mathuranath, Dr. Hima Pendharkar, Dr. Praveen R Murthy, Dr. Keshav Kumar, Dr. Tos Berendschot

14. Quantitative magnetic resonance imaging of brain in duchenne muscular dystrophy. Dr. Preethish Kumar V. Guides: Dr. A Nalini, Dr. Jamuna Rajeshwaran, Dr. Jitender Saini

15. Mitochondrial DNA copy number variation in Glioblastoma and its effect on sensitivity to radiation and chemotherapy - a clinical-molecular characterization. Dr. Sravya Palavalsa. Guides: Dr. Sampath S, Dr. Vani Santhosh, Dr. Arivazhagan A.

Mitochondrial DNA copy number has been studied and incriminated in various cancers, but not in Glioblastoma. Mitochondria contain multiple circular double stranded DNA (mtDNA) which code for 13 proteins of Electron Transport Chain. Certain nuclear genes are known to control the replication of mtDNA. Since altered metabolism (Warburg effect), a hallmark of cancer cells, could result from abnormal intergenomic crosstalk, this will be investigated in Glioblastoma by studying: (i) mtDNA copy number in Glioblastoma and its variation with Chemo-radiotherapy, using qRT-PCR (ii) the role of nuclear gene/s regulating mtDNA copy number in Glioblastoma by studying protein expression using Immunohistochemistry (iii) the effect of mtDNA copy number on...
resistance to therapy by studying sensitivity of differentially depleted (using ethidium bromide) clones of established Glioblastoma cell lines to radiation and chemotherapy.

16. Mutational analysis in duchenne and becker muscular dystrophy – A next generation Sequencing based study with genotype-phenotype correlation. Dr. Kiran Polavarapu. Guides: Dr. Nalini A, Dr. Monojit Debnath, Dr. Jamuna Rajeshwaran,

Next-generation sequencing technology will be applied for identifying mutations in DMD/BMD patients previously undetected by MLPA technique. The objectives of the study include comparison of MLPA and NGS in detecting copy number variations in DMD gene and analysis of carrier status in all the available mothers and sisters of probands. Based on the NGS profiling of DMD gene mutations, a phenotypic - genotypic correlation as well as correlation to probands. Based on the NGS profiling of DMD gene mutations, a phenotypic - genotypic correlation as well as correlation to probands.

17. Genetic, proteomic and advanced neuroimaging correlates of spinocerebellar ataxia 2. Dr. Albert Stezin Sunny. Guides: Dr. Pramod Kumar Pal, Dr. Sanjeev Jain, Dr. Rose Dawn Bharath, Dr. Jitender Saini, Dr. Shantala Hegde, Dr. Harsh Gowda

The study aims to evaluate the clinical, neuropsychological, genetic, proteomic and neuroimaging correlates of Spinocerebellar Ataxia 2. This study would help in characterizing the cognitive profile of patients and help in understanding the underlying structural and functional changes in brain. In addition, genetic and proteomic study would help in understanding the molecular basis of neurodegeneration and phenotypic variability of the clinical symptoms.

18. Study of sleep architecture, cognition and neurochemical correlates in Parkinson's disease and other atypical parkinsonism. Dr. Ragasudha Botta. Guides: Dr. Ravi Yadav, Dr. Pramod K Pal, Dr. Anita Mahadevan, Dr. Bindu Kutty, Dr. Keshav Kumar

The study focusses on the role of sleep, cognition and skin biopsy in differentiating between Parkinson's disease and atypical parkinsonism by using polysomnography, imaging, neuropsychological assessment, skin biopsy and serum alpha synuclein levels.

19. Identification of lithium induced molecular network changes in Huntington's disease. Dr. Nikhil Ratna. Guides: Dr. Mathew Varghese, Dr. Pramod K Pal, Dr. Ramakrishnan Kannan, Dr. Keshava Prasad

Using proteomic and phosphoproteomic profiling of Huntington's disease patient derived cell lines and tissue specifically expressed transgenic mutant Huntington flies, the investigators aim to delineate the putative targets and the related pathways induced by mutant Huntington and lithium in the disease models.
The present scoping study was conducted to review ongoing healthy workplace initiatives for Health Promotion in the organized and unorganized labour sectors in India. Review of 119 articles indicated the prevalence of Diabetes, Hypertension, risk factors like tobacco, alcohol and overweight to be higher than general population levels, though not epidemiologically comparable. Health promotion interventions were not focused, limited to bigger industries and was not evaluated for effectiveness. Focused NCD programmes aimed at employee wellness in unorganized sector is virtually absent.

5. Developing and implementing mental health promotion services for youth in Karnataka – Project Yuva Spandana. Investigators: Dr. G Gururaj, Dr. Pradeep BS (Funding by Department of Youth Empowerment and Sports, Govt. of Karnataka)

Trained 95 Yuva Parivarthakas, reached 479454 youth through 2287 sensitisation programmes. About 4541 youth have received guidance from 30 Yuva Spandana Kendras in each district in Karnataka

6. Developing and implementing life skills and counselling services for youth through NSS co-ordinators in Karnataka. Investigators: Dr. Pradeep BS, Dr. G Gururaj (Funding by NSS wing of the Department of Youth Empowerment and Sports, Govt. of Karnataka)

7. Screening for non-communicable disease risk, common mental disorders and work stress in Dalmia Cements Pvt. Limited. Investigator: Dr. Gautham MS (Funding by Dalmia Cements)

The present screening study was conducted to explore feasibility of identifying NCD risks, hypertension, depression, anxiety and harmful work stress among 114 employees, during the periodical medical examination. Study revealed that psychological distress, probable depressive disorders, work stress, hypertension, tobacco use, alcohol use and overweight are individually prevalent in at least 10% of employees. Elevated blood pressure, overweight and alcohol use are priority risk factors to be intervened on urgent basis, as it is prevalent in nearly half of the employees.

8. A prospective study of the barriers of childhood disability care among pediatricians - multi-centre National study (Supported by Indian Academy of Cerebral Palsy). Investigators: Dr. G Shashikala, President, Indian Academy of Cerebral Palsy, Dr. Maria Lewin, Associate Professor, Department of Pediatrics, St. John's Medical College, Bangalore, Dr. Senthil Amudhan, Dr. R Premlatha, Professor and Head, Department of Pediatrics, Bengaluru Medical College and Research Institute, Bengaluru, Dr. Gayatri Devi, Assistant professor, Department of Pediatrics, Bangalore Medical College and Research Institute, Bengaluru, Dr. Meenakshi Girish, Associate Professor, N.K.P. Salve Institute of Medical Sciences & Research Centre, Nagpur

Following the results from the pilot survey, the main study was undertaken in three cities in India Nagpur (state of Maharashtra), Bengaluru and Kolar districts (state of Karnataka) to understand the barriers for providing early childhood disability care among pediatricians (both general and public). “Barriers for Childhood Disability Care (BCDC)-Provider Version” was used to provide insights into the physician barriers to childhood disability care for developing early diagnosis guidelines for childhood developmental disability in India.

Students:

9. Mental health services provided by medical officers in Kolar district: A situational assessment. Dr. Bhujabali D Yalgudri. Guides: Dr. Gautham MS, Dr. Girish N Rao, Dr. N Manjunatha (Funding by CPH, NIMHANS)

10. Assessment of systems and services available for mental health problems and non-communicable diseases among primary and secondary health care facilities in Bruhat Bengaluru Mahanagara Palike. Dr. Shilpa C. Guides: Dr. Arvind BA, Dr. Girish N Rao (Funding by CPH, NIMHANS)

11. Assessment of mental health stigma among medical officers and paramedical staff in Kolar District, Karnataka. Dr. Harish Babu GS. Guides: Dr. Senthil Amudhan R (Funding by CPH, NIMHANS)
Overall, the study reported a higher knowledge but less favourable behaviour and attitude among health care providers when compared to their counterparts in other studies. This finding highlights the need to carry out anti-stigma programs among health care providers, to improve the quality of care and utilizations of services. With mental disorder being a public health problem, such anti-stigma programs should train healthcare providers to approach mental health problem from a public perspective focusing on community health education, rehabilitation and follow-up bedsides case detection and management.

Routine monitoring of intracranial pressure is not being done due to high cost. A reliable and cheaper ICP monitoring sensor can be made in India. This will enable more number of patients in whom the ICP can be monitored, thus improving the outcomes of severe brain injured patients. The technology was developed in the earlier project in collaboration with Indian Institute of Science again sponsored by the SBMT. The objective of the project is to manufacture the sensors and test its biocompatibility. On testing of the sensors manufactured by a company called SITAR a lot of drift was observed. At present, the investigators are in the process of identifying the problem and developing technology to decrease the drift.

2. Correlation between set target propofol effect site concentration and cerebro spinal fluid propofol concentration in patients undergoing neurosurgical procedures – A pilot study. Investigators: Dr. M Radhakrishnan, Dr. Vikas V, Dr. Manish Beniwal

In patients with neurosurgical disorders, drug concentration, including anaesthetics, in the brain might vary depending upon the integrity of the BBB. This can result in excess level of anaesthetics in the brain leading to delayed awakening. There are no studies on comparison of brain anesthetic levels in patients with intact and disrupted BBB. This project is designed to study the propofol concentration in the blood and in the cerebrospinal fluid under steady state propofol intravenous anesthesia (TIVA) in patients undergoing neurosurgical procedures. Propofol levels in the blood and the CSF will be correlated with the target level set in the TIVA. The integrity of the blood brain barrier will be studied by measuring the albumin levels in the blood and in the cerebrospinal fluid (CSF) and also from imaging studies. The CSF propofol levels in situations of intact and disrupted BBB will be compared.

3. Heart rate variability as a tool to assess autonomic nervous system in patients with neurological disorders. Investigators: Dr. M Radhakrishnan, Dr. Ramesh VJ (Funding by SERB, DST)

Patients with infratentorial tumours, cervical compressive myelopathy and intracranial aneurysms have significantly low baseline heart rate variability when compared to controls. Postoperative HRV values are lower compared to their preoperative values irrespective of the disease status. Presence of high VLF pattern in intracranial aneurysm patients is associated with 4 times more mortality.

4. Systematic review and meta-analysis of observational studies: Prevalence and intensity of persistent post-craniotomy pain

Investigators: Dr. Sri gasesh K, Jason Busse, National Pain Centre, McMaster University

Persistent post-surgical pain (PPSP) after craniotomy is associated with lower rates of return to work, reduced quality of life and increased healthcare costs. Earlier studies document varying prevalence rates of
PPSP after craniotomy (0 to 64%) depending on definition (> 2 or 3 months after surgery; new pain after craniotomy or any post-operative pain/headache), type of surgery (supratentorial or infratentorial, craniotomy or craniectomy) and duration of follow-up. The objective of this research is to investigate prevalence and intensity of PPSP after craniotomy in published literature. Six electronic databases will be searched (MEDLINE, EMBASE, CINAHL, PubMed, PsycINFO and IndMed). Cohort studies or case-controlled studies that report prevalence and/or intensity of persistent/chronic (≥ 3 months) postsurgical pain or headaches after craniotomy will be included. Exclusions encompass randomized controlled studies/trials, case series, editorials, commentaries, letters, comments, or studies that enrol ≤ 20 patients.

5. Non opioid perioperative analgesia in neurosurgery (NO PAIN) study. Investigators: Dr. Srigaresh K, Dr. Sudhir V

Opioid analgesics, despite providing good intraoperative analgesia, have well-known adverse effects which are undesirable in patients undergoing neurosurgery. Suitable alternative that provide equivalent quality of analgesia is therefore needed. Dexmedetomidine is known to be an effective co-analgesic to opioids during neurosurgery. The purpose of the proposed randomized controlled blinded study is to compare feasibility, safety and efficacy of scalp block with dexmedetomidine versus scalp block with fentanyl for intraoperative analgesia in patients undergoing craniotomy.

6. Retrospective study of perioperative factors affecting the neurological outcome in surgically treated extradural hematomas. Investigators: Dr. Sudhir Venkataramaiah, Dr. Bharath Vinay

Hemodynamic instability is frequent in traumatic brain injury (TBI) and may result in part, from absolute or relative adrenal insufficiency (AI). The TBI patients who show hemodynamic response to hydrocortisone replacement therapy have favorable neurological outcome. It has proved difficult to identify this group of patients prior to initiation of hydrocortisone therapy based on biochemical results. The aim of this study is to evaluate circulating cortisol levels in hemodynamically unstable TBI patients who require vasopressor and to identify patient subgroups that are most likely to benefit with an improved neurological outcome from low dose steroid supplementation.

7. Role of circulating cortisol levels on hemodynamic instability and outcome after acute traumatic brain injury. Investigators: Dr. Gopalakrishna KN, Dr. GS Umamaheswara Rao, Dr. Rita Christopher, Dr. Dhaval Shukla, Dr. Ravitej (NIMHANS Intramural Funding/Grant)

8. Perioperative factors affecting neurological outcome in infants undergoing surgery for intracranial lesion: A retrospective study. Investigators: Dr. Gopalakrishna KN, Dr. Dhiraj Chakrabarti, Dr. Nishanth Sadashiva, Dr. Sudhir Venkataramaiah, Dr. Ravitej

Childhood intracranial tumors present with clinical features that may affect conduct of anesthesia. Pediatric patients, especially infants have a higher risk for perioperative respiratory and cardiovascular morbidity and mortality than adult cohorts. As the lower limit of cerebral autoregulation in pediatric patients is unknown, they are at risk for cerebral hypoperfusion, especially when they are deeply anesthetized during periods of massive blood loss. These factors place infants at risk for significant neurological insult during neurosurgical procedures. Evidence based management of infant undergoing surgery for intracranial lesion is still evolving. There is no consensus for any specific anesthetic agent to be used for anesthetic induction or maintenance for intracranial surgery in infants. The outcome of patients undergoing intracranial surgery depends on various perioperative factors. This study evaluates the effect of perioperative factors on the postoperative outcome in infants undergoing surgery for intracranial lesion.

9. Correlation between the severity of paroxysmal sympathetic hyperactivity (PSH) and plasma catecholamine levels in patients with severe traumatic brain injury (sTBI). Investigators: Dr. Sonia Bansal, Dr. Rohini Surve, Dr. Dhaval P Shukla (NIMHANS Intramural Funding/Grant)

Paroxysmal Sympathetic Hyperactivity (PSH) can increase the morbidity and mortality after TBI. The primary objective of the study is to find out the correlation between the severity of PSH and the plasma levels of epinephrine and norepinephrine in patients with sTBI. The secondary aims are to find out the predictability of Heart Rate Variability (HRV) monitor for occurrence of PSH and examine whether PSH is associated with hypermetabolism by assessment of nutritional status. All patients with severe head injury admitted to ICU will be included in the study and will undergo HRV monitoring for 3 consecutive days. In cases of PSH, a blood sample will be drawn for estimation of plasma epinephrine and norepinephrine levels for 3 consecutive days and similarly in age, gender and GCS matched control, similar blood samples will also be sent for catecholamine levels. Also, estimation of serum pre-albumin levels will be done in both the groups. Outcome of patients (as GOSE, DRS and GCS at discharge) will also be noted.

10. Advanced Magnetic Resonance Imaging (MRI) based predictors of long term functional outcome in severe traumatic brain injury. Investigators: Dr. Rohini Surve, Dr. GS Umamaheswara Rao, Dr. Radhakrishnan M, Dr. Sonia Bansal, Dr. Rose Dawn Bharath (NIMHANS Intramural Funding/Grant)

Traumatic brain injury (TBI) is a serious global health concern and is associated with high mortality, morbidity and disability. Owing to the improved care, the survival rate among severe TBI patients has
increased in recent past. However, the survivors of TBI experience various degrees of neurological disabilities (approximately 50%) requiring long term rehabilitation and support and thus imposing tremendous social and economic burden both on the family and by and large on the society. Hence, prognosticating outcome during the early phases of the management of severe TBI becomes paramount importance. Prognostication aids in early decision making regarding extent of interventions required, continuation or withdrawal of the active interventions, allocating the limited resources and explaining the family the likely outcome and thus better preparedness emotionally. In this study, the investigators endeavor to explore the role of advanced MRI techniques to prognosticate the functional outcome at 6months/1year, in severe TBI within 7 days of injury.

11. Effect of pentoxyphylline on microvascular flow pattern in experimental cerebral vasospasm model. Investigators: Dr. M Radhakrishnan, Dr. Nupur Pruthi, Dr. Prabhuraj AR (NIMHANS Intramural Funding/Grant)

Students:

12. Evaluation of Analgesia Nociception Index as a tool to monitor pain and manage analgesia during supratentorial craniotomies: A randomized double blind study. Dr. Kaushic A. Guides: Dr. Madhusudan Reddy, Dr. Sriganesh Kamath

Analgesia Nociception Index (ANI) provides objective information about the degree of intraoperative pain and adequacy of analgesia. The investigators conducted a prospective, randomized, double blinded study on 60 adult patients who underwent elective supratentorial surgery and compared ANI in patients, who received scalp block or infiltration at pin and incision sites. It was found that ANI decreases below 50 following thiopentone administration and laryngoscopy. Scalp block provided better analgesia for pin fixation compared to infiltration as demonstrated by ANI. Scalp block or infiltration at the incision site effectively prevented a decrease in ANI values during skin incision. ANI decreased significantly after extubation.

13. Incidence and impact of cardiac dysfunction in isolated traumatic brain injury patients requiring surgical. Dr. Bharath S. Guides: Dr. GS Umamaheswara Rao, Dr. Radhakrishnan M, Dr. Dhananjaya I Bhat

The aim of the study was to evaluate cardiac dysfunction associated with traumatic brain injury patients undergoing emergency surgical decompression. The investigators studied ECG, echocardiography changes in preoperative period and postoperative period for 2 days. During intraoperative period cardiac output using Flotrac EV1000 clinical platform was monitored. From the study, the incidence of cardiac dysfunction on echocardiography (left ventricular ejection fraction < 50%/ Regional Wall Motion Abnormality) was 10 % which reduces in the postoperative period. The predominant ECG changes are repolarization abnormalities before surgery, whereas ST - T changes after surgery. Improvement in cardiac output was seen following surgical decompression during intraoperative period.

14. Effects of different prone patient positioning on optic nerve sheath diameter in spine surgeries. Dr. Amitesh Kumar Pandey. Guides: Dr. Ramesh VJ, Dr. Gopalakrishna K

The study was done to evaluate the effect of prone position and reverse Trendelenburg's position on optic nerve sheath diameter (ONSD) to reflect the effect of ICP on different positioning in patients undergoing surgeries in prone position in spine surgeries. It was found that as the patients are turned from supine to prone position there is clinically significant increase in the ONSD and it keeps on increasing over the period of time reflecting the increase in the ICP. However, reverse Trendelenburg's position of 10 degree was able to effectively attenuate the changes and ONSD did not increase significantly from supine base line value. This method of positioning can be used to decrease elevated ICP or prevent further elevation of ICP in at risk patients.

15. Does manipulating cardiac output and blood pressure cause associated parallel change in cerebral blood flow in patients of traumatic brain injury and sub-arachnoid haemorrhage. Dr. Manjunatha L. Guides: Prof. GS Umamaheswara Rao, Dr. Radhakrishnan M

The aim of the study is to examine the changes in cerebral haemodynamics following augmentation of cardiac output and blood pressure in patients of traumatic brain injury and subarachnoid haemorrhage. This prospective observational study will be conducted in 100 patients over 18 months. Cardiac hemodynamic parameters will be recorded with non-invasive cardiac monitor. MCA flow velocity will be recorded using TCD. Autoregulation will be assessed using THRR. Noradrenaline infusion will be started at a dose of 0.05mcg/kg/min and rate increased by 0.05mcg/kg/min every 5min to achieve desired BP after which observations will be repeated.

16. Comparative study of awake orotracheal intubation using fibreoptic scope versus video laryngoscope in patients undergoing surgery for unstable cervical spine. Dr. Kaustuv Dutta. Guides: Dr. Madhusudan Reddy, Dr. Sriganesh, Dr. Nupur Pruthi

This study aims to compare awake orotracheal intubation performed with two different techniques - McGrath Videolaryngoscopy assisted, and fibreoptic guided in patients at risk of secondary cervical cord injury due to unstable cervical spine.

The primary objective is to assess cervical-spine movement at C1/2 and C2/3 level during intubation by using fluoroscopy. Secondary objectives
are to assess change in the neurological status (motor power and sensory examination in both upper and lower limbs) during intubation process and evaluate hemodynamic changes, intubation success and patient satisfaction regarding awake intubation with these two techniques.

17. **Effectiveness of three regimens of sedation for children in magnetic resonance imaging.** Dr. Shwethashri KR. Guides: Dr. V Bhadrinarayan, Dr. V Sudhir

Children posted for MRI under sedation have neuropsychiatric disorders that are often complicated by metabolic disorders imposing significant challenge. Commonly used drugs for sedation in MRI like propofol infusions stand-alone causes respiratory depression and dexmedetomidine stand-alone causes hypertension and prolonged recovery. By exploiting the properties of both drugs a new regimen is formulated that includes induction with propofol and maintenance with dexmedetomidine infusion facilitating faster recovery. The primary aim of the study is to compare the effectiveness of three regimens of sedation for MRI in children. Secondary aim is to compare hemodynamic parameters, respiratory parameters, recovery characteristics and adverse effects between three regimens.

18. **Remote ischemic preconditioning in decreasing post electroconvulsive therapy induced cognitive dysfunction.** Dr. Ravitej. Guides: Dr. VJ Ramesh, Dr. Gopalkrishna KN, Dr. Jagadisha Thirthalli, Dr. Naveen Kumar

A non-invasive way of protecting the organ from ischemic injury is known as remote ischemic preconditioning (RIPC). The mechanisms of excitotoxicity and inflammation causing post ECT cognitive dysfunction and the antioxidant and anti-inflammatory properties of RIPC can be exploited in the ameliorative strategies of post ECT cognitive dysfunction. The aim of this study is to evaluate the role of RIPC in decreasing post ECT cognitive dysfunction.

19. **To evaluate the dose requirement of propofol for induction of anaesthesia in patients with traumatic brain injury using bilateral Bispectral Index.** Dr. Scham Syeda. Guides: Dr. V Bhadrinarayan, Dr. Sonia Bansal

The dose requirement for induction of anaesthesia in patients with traumatic brain injury (TBI) is of considerable interest to neuroanaesthesiologists. Previous studies have demonstrated decreased requirement of propofol for neurosurgical procedures. However, there is paucity of literature regarding anaesthetic requirements in TBI. Clinical end points for induction are difficult to assess in TBI. Therefore, EEG based monitors like Bispectral Index (BIS) and Spectral Entropy are used for assessing end point of induction. This study is designed to determine dose requirement of propofol for induction of anaesthesia in patients with TBI undergoing surgery, using a bilateral BIS monitor.

20. **Effect of remote ischemic preconditioning on cerebral vasospasm and biomarkers of cerebral ischemia in patients with cerebral aneurysmal sub arachnoid haemorrhage: A randomized controlled trial.** Dr. Sangeetha RP. Guides: Dr. Ramesh VJ, Dr. Sriganesh K, Dr. Rita Christopher, Dr. Dhananjaya I Bhat, Dr. Arvinda HR

Cerebral vasospasm is a dreaded complication following subarachnoid hemorrhage in patients with cerebral aneurysm and is an important cause of delayed cerebral ischaemia. Remote ischemic pre-conditioning in the form of intermittent limb ischemia and reperfusion is a potential technique to protect the brain from subsequent lethal injury by administering brief episodes of sub-threshold ischemia. In this study, the investigators intend to study cerebro-protective effects of upper limb RIPC in these patients scheduled for endovascular coiling of aneurysm using transcranial Doppler and cerebral angiography parameters to detect cerebral vasospasm and measurement of serum biomarkers S100B and neuron specific enolase levels.

21. **Evaluating nociception indices ANI and SPI in elective supratentorial tumour excision under general anaesthesia – A prospective single group correlational study.** Dr. Prashanth A Menon. Guides: Dr. Madhusudan Reddy, Dr. Sudhir V

The objective of the study is to evaluate pain indices ANI and SPI along with MAP and HR at various time points during supratentorial tumour surgery. To evaluate end-surgery ANI with end-surgery numerical pain score in supratentorial surgery.

After informed written consent and ethical clearance, 100 adult patients undergoing elective supratentorial tumor resection under GA will be part of this open label single group correlational non-interventional study. Variables of age, sex, BMI, blood loss, duration of surgery as well as ANI, SPI, MAP and HR would be recorded at pre-defined time points.

22. **Correlation of regional oxygen saturation with transcranial Doppler and outcome in traumatic brain injury - A prospective observational study.** Dr. Kanchan V Bilgi. Guides: Prof. GS Umanaheswara Rao, Dr. K Gopala Krishna

Assessment of traumatic brain injury (TBI) by objective methods may help reduce morbidity and in prognostication. Near infrared spectroscopy is a non-invasive, bedside method for detection of clinically silent episodes of cerebral ischemia by measuring cerebral oxygen saturation. Transcranial Doppler measurements provide additional information about neurologic outcome after TBI. Sonographic optic nerve sheath diameter (ONSD) provides non-invasive estimate of intracranial pressure after TBI. These non-invasive tools will be used in this study to establish a correlation between one another and with neurologic outcome. The Glasgow
outcome scale – extended (GOSE) will be used in this study to assess neurologic outcome.

23. Effect of propofol on cerebral oxygen saturation in patients undergoing craniotomy and clipping of anterior circulation aneurysms and lumbar spine surgery – a comparative study using Near-Infrared spectroscopy. Dr. Anil Kumar BN. Guides: Dr. Madhusudan Reddy, Dr. Rohini

In patients with aneurysmal subarachnoid hemorrhage (aSAH), propofol and thiopentone are commonly used for anesthetic induction. Both are known to be cerebro-protective. However, post induction hypotension is more with propofol. In patients with aSAH, hypotension can lead to cerebral ischemia. NIRS technology captures information about cerebral oxygen saturation (rSO2) using forehead sensors. In this study, the investigators endeavour to study the changes in rSO2 during induction of anesthesia with propofol in patients with anterior circulation aneurysms undergoing craniotomy and clipping and compare them with patients undergoing lumbar spine surgery which will serve as a control group i.e. without cerebral insult.

24. Bispectral index value changes during induction and surgical decompression in head injury patients. Dr. Deepthi BS. Guides: Dr. M Radhakrishnan, Dr. Gopalakrishna KN

The objectives of the study are to investigate thiopentone requirement in head injured patients for induction of anesthesia, based on BIS and clinical end points and to observe the intraoperative BIS changes and correlate with neurologic outcome. Adult patients of either sex with severe head injury and requiring surgery are being recruited for the study.

25. Systemic complications in patients with intracranial tumours admitted to the neurointensive care unit: An observational study. Dr. Shyamala N. Guides: Dr. V Bhadrinarayan, Dr. Sudhir V

Neurological conditions are associated with non-neurological complications and are extremely common in patients with brain injury. An observational study in severe traumatic brain injury (TBI) patients has showed that non-neurological complications increase length of hospital stay and morbidity in ICU but not mortality with exception of AKI and hypotension in low GCS. Systemic complications have been predominantly studied in TBI and subarachnoid haemorrhage. There is inadequate data on occurrence of systemic complications in patients with intracranial tumours admitted in neurointensive care unit. This study aims to evaluate incidence of systemic complications in patients with intracranial tumours admitted to the ICU.

26. Correlation between tissue oxygen saturation and regional cerebral oxygen saturation in neurological patients with sepsis. Dr. Badri Prasad Das. Guides: Prof. GS Umamaheswara Rao, Dr. Sonia Bansal

There is paucity of literature comparing tissue-oxygen saturation (StO2) and regional cerebral-oxygen saturation (rSO2) in patients with sepsis/septic shock. Thus the investigators aim to evaluate the correlation between StO2 & rSO2, using NIRS in neurological patients with sepsis and septic shock, and to compare them with global hemodynamic parameters.

A single-centric, prospective, observational, cohort study is planned between September 2016 and May 2017, where 45 adult neurosurgical patients (traumatic brain injury/ supratentorial space-occupying lesions) and neurological patients (Guillain–Barré syndrome/ Myasthenia Gravis), with clinical diagnosis of sepsis/ septic shock from any cause, belonging to age group 21-80 years, will be included.

27. Utility of cerebral oximetry in diagnosing delayed cerebral ischemia in aneurysmal subarachnoid haemorrhage in neuro intensive care unit. Dr. Pavithra V. Guides: Dr. Radhakrishnan M, Dr. Rohini MS, Dr. Dhananjay Bhat

In this study, we are trying to study the changes in rSO2 (cerebral oxygenation), CBFV (cerebral blood flow velocity) and SjvO2 (jugular venous oxygen saturation) as a surveillance technique in patients prone to develop vasospasm.

**Neuro Imaging and Interventional Radiology**

1. Dynamic functional connectivity uncovers altered brain synchrony during propofol sedation. Investigators: Dr. Sriganesh K, Dr. Rose Dawn Bharath

Human consciousness is considered consequent to synchronous “humming” of multiple dynamic networks. The investigators undertook dynamic functional connectivity analysis of resting state functional magnetic resonance imaging (rsfMRI) in 14 patients, before and during propofol infusion, to characterize sedation induced alterations in consciousness. A sliding 36 seconds window was used to derive 59 time points of whole brain integrated local connectivity measures. Significant changes of connectivity strength (Z Corr), at various time points, were used to measure connectivity fluctuations during awake and sedated states. In comparison with the awake state, sedation was associated with reduced cortical fluctuations in several areas connected to default mode network and around the peri-rolandic cortex, with a significantly decreased correlation of connectivity within their anatomical homologues. In addition, sedation was also associated with increased fluctuations in the frequency range of 0.027 to 0.063 Hz in several deep nuclear regions involving the cerebellum, thalamus, basal ganglia and the insula.
Investigators: Dr. Vivek Benegal, Dr. Rose Dawn Bharath

Familial susceptibility to alcoholism could be linked to the externalizing diathesis seen in high-risk (HR) offspring from multiplex alcohol use disorder (AUD) families. The present study aimed at exploring the link between externalizing symptoms and alcoholism familial history risk by examining the resting-state functional brain networks. Substance-naive high-risk (HR) male offspring (n=40) from multiplex-AUD families were compared with healthy low-risk (LR) males (n=30). The topological properties of the resting-state functional brain networks were analyzed with a graph-theory based approach. The relationship of the externalizing symptom scores (ESS), alcoholism family loading and age with the altered network measures were also evaluated.

The HR subjects showed significantly reduced clustering and small-worldness in the frontoparietal, cingulo-opercular, sensorimotor and cerebellar networks. These disruption exhibited independent incremental values in predicting the ESS over and above the demographic variables. The reduction of functional segregation in HR subjects was proportional to family loading of AUDs.

3. MRI lesion mapping in Neurocysticercosis (NCC). 
Investigators: Dr. Jitender Saini, Dr. AK Gupta

4. Advanced network analysis of the structural connectome of human brain. Investigator: Dr. Jitender Saini (Funding by SERB)

5. DTI analysis of head bath triggering Migraine. Investigators: Dr. Maya Dattatraya Bhat, Dr. Girish Baburao Kulkarni, Dr. Chandrajit Prasad, Dr. Bhavani Shankara Bagepally (NIMHANS Intramural Funding)

6. SANSCOG study. Investigators: Dr. Sandhya M, Dr. Chandana (Funding by Centre for Brain Research)

7. Assessment of brain plasticity induced by repeated trans cranial magnetic stimulation in patient with movement disorder using resting brain networks and connectivity. Investigators: Dr. Rose Bharath Dawn, Dr. Pramod Kumar Pal (Funding by DST)

Students:

8. Evaluation of T1W Dynamic contrast enhanced MRI in Tubercular and cryptococcal meningitis. Dr. Abha Verma. 
Guides: Prof. AK Gupta, Dr. Saini J, Dr. Netravathi

The objective of the study was to quantify the degree of BBB disruption in tuberculous and cryptococcal meningitis using DCE-MRI. DCE-MRI (Dynamic contrast enhanced magnetic resonance imaging) allows for the quantification of the physiologic indices which are directly related to the integrity of the blood-brain barrier (BBB).

DCE-MR perfusion showed BBB disruption in patients of tuberculous and cryptococcal meningitis, even in those patients with an apparently normal study on conventional MRI Brain. A global BBB disruption was seen patients, in whom conventional MRI revealed focal areas of leptomeningeal enhancement. A decrease was seen in most of the DCE indices after six months of therapy, particularly leakage (β) parameter, signifying response to treatment.
9. Yield of percutal arterial spin-labeling MRI perfusion in refractory epilepsy. Dr. Sarbesh Tiwari. Guides: Prof. AK Gupta, Dr. Jitender Saini, Dr. Sanjib Sinha

The study aimed to evaluate the utility of Arterial spin labelling (ASL) in localisation of seizure focus based on perfusion changes during early post ictal period and study its concordance with structural MRI & Video EEG. Twenty eight consecutive patients with drug resistant epilepsy with positive video EEG findings were studied. ASL showed perfusion changes in 26 of 28 patients with median seizure to ASL scan duration of 6 hours. ASL had good concordance with sMRI (k= 0.66), moderate concordance with VEEG (k= 0.652) and good concordance with FDG-PET (k= 0.60). Thus, ASL, proved a useful tool for seizure localization and could be incorporated into the presurgical evaluation of localisation / non localisation related epilepsy.

10. Efficacy and clinical outcome evaluation following flow diverter treatment of intracranial aneurysms. Dr. Soumit Das. Guides: Prof. AK Gupta, Dr. Himla Pendharkar, Dr. Arvinda HR, Dr. Dhananjaya I Bhat, Dr. KR Madhusudan Reddy

The flow diverter is a stent placed in the parent artery to reduce blood flow in the aneurysm sac to the point of stagnation, induce gradual thrombosis, and neo-intimal remodeling to maintain outflow in the side branches and perforators. The intention of this study is to assess the efficacy and clinical outcome of flow diverter placement after at least 6 months have elapsed since the procedure in patients of intracranial aneurysm treated in the Department of NIIR, NIMHANS, Bengaluru. This study is a retrospective-prospective; hospital based interventional study from September 2013 to November 2017.

11. Vein of galen aneurysmal malformations: Angioarchitectue, management and clinical outcome. Dr. Kajari Bhattacharya. Guides: Dr. Arun Kumar Gupta, Dr. Hima Pendharkar, Dr. Chandrjait Prasad, Dr. B Indira Devi, Dr. Ramesh VJ

Vein of Galen Aneurysmal Malformations (VGAM) are uncommon anomalies of intracranial circulation that constitute 1% of all intracranial vascular malformations. However, 30% of vascular malformations presenting in the pediatric age group can be attributed to them and can lead severe morbidity as well as mortality, particularly in neonates but also in infants and older children. With the advent of endovascular interventional techniques, the prospects for successful treatment of these lesions, once dismal, are now much improved. Several management strategies have been advocated in the medical literature, varying in recommended route of approach (arterial /venous or combined), embolization material (coils or liquid embolic agents), timing of treatment, and management of associated conditions. Abnormalities of Vein of Galen malformation can be primary to malformation pertaining to the median prosencephalic vein of Markowski or cerebral arteriovenous malformations draining into the deep venous system may lead to an acquired ectatic dilatation of the vein of Galen confluence due to either stenosis at the veno-dural junction or thrombosis of the straight sinus. Management of these conditions significantly differs, and hence identification of the angioarchitecture of the malformation is of paramount importance.

12. Conventional and advanced magnetic resonance imaging features in predicting idh mutation status in high grade gliomas. Dr. Aarthi Deepesh. Guides: Dr. Arun Kumar Gupta, Dr. Jitender Saini, Dr. Maya D Bhat, Dr. Vani Santosh, Dr. S Sampath.

Gliomas are the most common primary malignant brain tumour of the central nervous system. They can be categorized to 4 grades according to the WHO revised edition 2016 classification. Recent advances in our understanding of the tumour biology show that IDH mutation plays a significant role in disease progression, treatment response and overall prognosis and survival. Apart from glioma grades which influence the prognosis, it is important to predict the IDH mutation status. Though the gold standard is immunohistochemistry and sequencing, it is invasive. With the availability of advanced MR imaging like MR spectroscopy, perfusion weighted imaging and diffusion imaging, the aim of the study is to predict IDH mutation status noninvasively with MRI which has important prognostic implications.

Neurology

1. Psychosocial intervention in Motor Neuron Disease. Investigators: Dr. A Nalini, Dr. Priya Treesa Thomas, Dr. Prakash Rajaram (Funding by ICMR)

2. Clinical and translational neuroscience. Investigator: Dr. P Satishchandra (Funding by IUSSTF)

3. Innovations in mental health and neurosciences: Manpower development and translational research centre for advanced research. Investigators: Dr. P Satishchandra, Dr. TR Raju, Dr. SK Shankar, Dr. Sarada Subramanian (Funding by ICMR)

4. Towards identification of novel genes for a reflex epilepsy (hot water epilepsy) triggered by tactile and temperature stimuli. Investigators: Dr. P Satishchandra, Dr. A Anand, JNCASR, Bengaluru (Funding by ICMR)

5. Automated portable EEG System – along with axxonet system technologies. Investigators: Dr. P Satishchandra, Dr. Sanjib Sinha, Mr. Chetan Mukundan, Axxonet System Technologies, Bengaluru (Funding by Biotechnology)
Industry Research Council, a Government of India Enterprise contribution)

6. Development of Intra-operative ECoG and depth recording electrodes for surgery for refractory epilepsy - part 1. Investigators: Dr. S Sinha, Dr. P Satishchandra (Funding by DEBEL-SBMT)

7. Respiratory chain disorders: Phenotypic genotypic and functional correlations. Investigators: Dr. Bindu PS, Dr. AB Taly, Dr. Gayathri N, Dr. Srinivas Bharath MM, Dr. Meera Purushotham (Funding by ICMR)

This study involved analysis of respiratory chain complexes in muscle tissue of patients with mitochondrial disorders and its correlation with the phenotype and genotype. During this period, fifty children with respiratory chain enzyme deficiencies underwent targeted exome sequencing which included all the nuclear encoded mitochondrial genes and other metabolic disorders genes. Likely pathogenic variants were identified in 28 (Autosomal recessive inheritance 25, X-linked inheritance-3) of which 23 were mitochondrial disease associated. The mitochondrial genes included variations in complex 1 genes (NDUFS1, NDUFS2, NDUFS4, NDUFS6, NDUFS8), complex III (LYRM7), Complex IV (SURF1, COX15), Multiple complex deficiencies (POLG1, SUCLA2, SUCLG1, MPV17, BOL3, SERAC1, ECHS1, RMN1), PDH (n=2). The non-mitochondrial genes included TPK, PEX, EIF2B2, EIF2B3, ACADS. Overall the targeted nuclear gene testing provided molecular diagnosis in 48% of children with probable mitochondrial disorders. The diagnostic yield was higher in patients with leukoencephalopathy than in those with Leigh syndrome (55% vs 38%). Detection of a variant in a gene not previously linked to the disease in humans was identified in one patient. This study highlights heterogeneous genetic findings in children with mitochondrial disorders in children from India.

8. Understanding the role of mitochondrial dysfunction in inherited peripheral neuropathies: A phenotype-genotype correlative study using next generation sequencing. Investigators: Dr. Madhu Nagappa, Dr. Bindu PS, Dr. AB Taly, Dr. Monojit Debnath, Dr. Yasha TC, Dr. Gayathri N, Dr. Anita Mahadevan, Dr. MM Srinivas Bharath, Dr. HR Aravinda

9. Development of next generation sequencing based assay for mutation detection and carrier status identification in duchenne and becker muscular dystrophy. Investigator: Dr. A Nalini, Dr. Sudha Rao (Funding by DST)

Seventy five percent of the patient recruitment process has been completed out of the proposed sample size of 100. Standardization of NGS work flow is successfully finished for initial set of samples. Subsequent probe design and order is already processed with necessary modification for next set of sample analysis. Preliminary data from NGS shows improved and accurate detection of mutations in DMD gene in comparison to existing techniques. Two novel pathogenic non-sense mutation identified in an MLPA negative biopsy confirmed DMD patient.

10. Evaluation of automatic functions as early predictor of neuropathy in prediabetes and in type 2 Diabetes Mellitus. Investigators: Dr. TN Sathyaprabha, Dr. A Nalini (Funding by ICMR)

11. Translational research in understanding pathophysiology of neurodegenerative disease – Emphasis on ALS. Investigators: Dr. TN Sathyaprabha, Dr. A Nalini (Funding by DST-CSRI)

12. Can cortical excitability changes predict the onset of cognitive impairment in Parkinson's disease? Investigators: Dr. Pramod Kumar Pal, Dr. Nitish Kamble (Funding by DST-CSRI)

13. Circulating microRNAs as biomarkers to differentiate between Parkinson’s disease, multiple system atrophy-Parkinsonism, and progressive supranuclear palsy. Investigators: Dr. Ravi Yadav, Dr. Pramod Kumar Pal, Dr. Rita Christopher (Funding by ICMR)

14. Protein biomarker discovery for Parkinson’s disease. Investigators: Dr. Akhilesh Pandey, Dr. Pramod K Pal (Funding by Wellcome Trust-DBT India Alliance)

15. PLA2G6 - associated neurodegeneration: A phenotypic and genotypic study. Investigators: Dr. Bindu, Dr. AB Taly, Dr. Madhu Nagappa, Dr. Sanjib Sinha, Dr. Arun Kumar

16. MEG spike and its source localization and network alterations in children and adolescents with Autism Spectrum Disorder with/without Epilepsy. Investigators: Dr. John V Sagar, Dr. Sanjib Sinha, Mr. N. Mariyappa (Funding by US-Fogarty Grant)

17. Multilingualism and multiliteracy: Raising learning outcomes in challenging contexts in primary schools across India. Investigators: Dr. Suvarna Alladi, Dr. Vandana VP, Dr. Roopesh BN (Funding by Economic and Social Research Council UK)

18. Kerala-Einstein Study: Healthy lifestyle, vascular disease, and cognitive decline. Investigator: Dr. PS Mathuranath (Funding by NIH, USA)
The objective of the study is to determine neural substrate responsible for human behaviour, by studying the behavioural changes in patients with Frontotemporal dementia and the corresponding structural changes in the brain, i.e. volume loss in different regions of the cortex, using voxel based morphometry.

19. **Sleep characteristics of caregivers of patients in neurological intensive care unit.** Investigators: Dr. Ravi Yadav, Dr. Girish B Kulkarni

20. **Role of anti-ganglioside complex antibodies in pathobiology of Guillain Barré syndrome: A clinical, electrophysiological and Immunological correlative study with longitudinal follow up.** Investigator: Dr. Madhu Nagappa (Funding by DST)

21. **Serial estimation of Inflammatory markers in serum of Guillain Barre syndrome patients to predict ongoing disease activity and recovery.** Investigators: Dr. R Subasree, Dr. Rita Christopher, Dr. M Veerendrakumar (NIMHANS Intramural Funding/Grant)

**Students:**

22. **Efficacy and safety of edaravone in acute cerebral venous thrombosis - A retrospective case control study.** Dr. Bobby Baby Panikulam Guides: Dr. M Veerendrakumar, Dr. Subasree R

From 2011-2016, a total of 46 patients with acute cerebral venous sinus thrombosis (CVST) had been treated with Edaravone 30 mg i.v., b.d. for 14 days (Edaravone group) in addition to standard therapy (heparin 5000 units s.c., 6th hourly for 10 days followed by oral anticoagulants, vigourous antioedema measures, correction of anaemia and other supportive measures). Retrospective analysis was carried out after matching for size and site of lesions in Edaravone group with 46 patients from control group -- CVST patients treated with standard therapy. In Edaravone group, though hospital stay was longer (23.6+/−13.7 days vs 18.5+/−19.2 days), need for surgery (41% and 54%), ventilation (16.7+/−21.5 days vs 17+/−27.7 days), and mortality (3% vs 23%) were lower as compared to control group. Edaravone therapy was well tolerated. Our observations suggest that Edavarone, a free radical scavenger, is a useful adjunct in the treatment of patients with CVST.

23. **The role of iron in the etiopathogenesis of Parkinson’s disease.** Dr. Rajini NM. Guide: Dr. Pramod K Pal, Dr. Rita Christopher, Dr. AK Gupta, Dr. Rose Dawn Bharath

This study is an attempt to understand the role of iron in the pathophysiology and molecular events underlying neurodegeneration in PD. This study deals with comparing possible disease markers (serum levels of iron, oxidative stress markers and advanced MRI for detection of iron) in a comprehensive way in a large cohort of PD patients in a case control manner, further to correlate the findings with the clinical findings.

24. **Inter-relationship of sleep and epilepsy using macro and microstructural Polysomnographic signal analysis.** Dr. Chetan Nayak. Guides: Dr. Sanjib Sinha, Dr. Taly AB, Dr. K Thennarasu, Dr. K Mazumdar

25. **EEG – BOLD MRI co-registration to study the patterns of synchronization between idiopathic generalized epilepsies and symptomatic localization related epilepsies.** Dr. G Chaitanya. Guides: Dr. P Satishchandra, Dr. Sanjib Sinha, Dr. Rose D Bharath, Dr. K Mazumdar

26. **MEG localization of lesions in neurosurgical interventions involving eloquent cortex.** Dr. Rakesh Mishra. Guides: Dr. Malla Bhaskara Rao, Dr. Sanjib Sinha, Dr. A Arivazhagan, Mr. N Mariyappa

27. **A longitudinal follow-up study of cerebral venous thrombosis patients.** Dr. Pawan Raj Pulu. Guides: Dr. Girish B Kulkarni, Dr. Ravi Yadav, Dr. Hima Pendharkar

This is a prospective longitudinal follow-up study of patients with cerebral venous thrombosis admitted to stroke unit at NIMHANS. One hundred and nineteen patients were recruited and followed-up for a duration of one year. Incidence of headache, seizures and neurological deficits, anticoagulation dose was studied during the follow-up.

28. **Sleep in drug resistant temporal lobe epilepsy—a sleep questionnaire and polysomnography based study.** Dr. Sai Deepak Yaranagula. Guides: Dr. Sanjib Sinha, Dr. AB Taly, Dr. Madhu N

In this study, 41 patients of drug resistant temporal lobe epilepsy were recruited and assessed using sleep questionnaires which included Epworth sleepiness scale (ESS), Pittsburgh sleep quality index (PSQI) and NIMHANS comprehensive sleep disorders questionnaire (NCSDQ). This data were compared with 41 controls. Polysomnography (PSG) analysis was done in 22 patients with drug resistant temporal lobe epilepsy. This was compared with PSG data of 22 laboratory controls. ESS scores and PSQI data of 17 patients who underwent surgery for temporal lobe epilepsy were compared pre and post-surgery. Similarly, PSG data of 4 patients were compared between the pre and post-operative periods. The study showed that subjective sleep quality was poorer in patients than healthy controls. PSG analysis showed that although number of arousals was lower in patients, they spent lesser time in deep
sleep than controls. Apnea events were higher in patients and limb movements higher in controls. Among the subgroups, except the number of AEDs, none of the other subgroups (duration of epilepsy, lateralization of epilepsy and mammillary body atrophy) affected sleep parameters. Sleep efficiency was better in patients on 2 drugs, than those on 3 or more drugs. Analysis of sleep profile in patients pre and post epilepsy surgery showed that subjective sleep quality did not show any significant differences after surgery. Patients spent more time in deep sleep with reduced arousals after surgery and had higher efficiency. In conclusion, patients have a poorer sleep quality than controls and some of the sleep quality parameters improved following surgery.

29. Sleep abnormalities and polysomnographic features in autosomal dominant spinocerebellar ataxia. A prospective case-control study. Dr. DV Seshagiri. Guides: Dr. Ravi Yadav, Dr. Pramod K Pal, Dr. Sanjeev Jain, Dr. Bindu M Kutty

A total of 75 SCA positive cases were recruited for the study and complete clinical examination was done. Severity of disease was assessed by International Cooperative ataxia Rating Scale (ICARS) and patients’ sleep quality measured through interview with Pittsburgh Sleep Quality Index (PSQI), Epworth Sleepiness Scale (ESS), RLS Questionnaire, RBD Questionnaire, Hamilton anxiety and depression scale. Thirty four patients were subjected to overnight video polysomnography. Predominant sleep disturbance found was insomnia. Polysomnographic evaluation revealed significant reduction in stage R sleep. There was negative correlation with disease severity and reduction Stage R sleep.

30. Anti-ganglioside complex antibodies in Guillain Barré syndrome: A clinical, electrophysiological and immunological correlative study. Dr. Rahul Rasasheb Wahatule. Guides: Dr. Taly AB, Dr. Anita Mahadevan, Dr. Monojit Debnath, Dr. Madhu Nagappa (Funding by ‘Golden Jubilee Fund’, Department of Neurology, NIMHANS & ICMR)

This prospective, first of its kind, study evaluated antibodies to Ganglioside Complexes (GSCs) in Guillain Barre Syndrome (GBS) and correlated with clinical and electrophysiological parameters. Ninety-five out of 100 patients were positive for antibodies against at least one Ganglioside, while 26 were positive for at least one GSC antibody, most frequently against GM1 containing GSC. No correlation was found between ganglioside antibodies and clinical or electrophysiological subtypes. Duration of mechanical ventilation was shorter and outcome at discharge was significantly better in GSC-antibody positive group. The study facilitated the development of an “in house-ELISA” technique for testing antibodies to gangliosides and GSCs.

31. Neural substrate of mirror agnosia and mirror image agnosia. Dr. Sumanth S. Guides: Dr. SR Chandra, Dr. Venkatasubramiam, Dr. Maya

32. An evaluation of genetically confirmed Myotonic dystrophy (DM1) with Quantitative MRI, Neuropsychological assessment and sleep questionnaires. Dr. Rahul Jankar. Guides: Dr. A Nalini, Dr. Ravi Yadav, Dr. Jamuna R, Dr. Chandrajit P

The study had 20 DM-1 patients with 20 gender and age matched controls. Increased day time somnolence was significantly more common in the patients. The neuropsychological assessment revealed attention and executive function deficits suggesting frontal lobe dysfunction which echoes the findings of earlier studies. A similar correlation was found with the left frontal grey matter loss and attention deficit on quantitative MRI analysis. The investigators also found significant white matter loss in our patients which is relatively more than grey matter affection. The sleep disturbances and cognitive deficits should have neural correlates in view of significant brain involvement.

33. Cognition and its imaging correlation in patients with Multiple System Atrophy (MSA). Dr. Santosh Dash. Guides: Dr. Pramod Kumar Pal, Dr. Jitender Saini, Dr. Keshav Kumar J, Dr. Ravi Yadav, Dr. Netravathi M

Multiple system atrophy is an adult onset, sporadic atypical Parkinson’s disease. Contrary to the previous belief that dementia is an exclusion criterion for diagnosis of multiple system atrophy (MSA), recent reports have shown cognitive impairment in this group of patients. However, But the cognitive impairment in both subgroups of MSA (MSA-P&MSA-C) is poorly understood. The aim of the study is to examine the clinical profile, cognitive functions in patients with MSA and to correlate the clinical severity with cognitive impairment. The study was conducted at NIMHANS, Bengaluru and 30 MSA
patients (20 MSA-C & 10 MSA-P) and 25 age, education matched healthy controls were included. Diagnosis was made based on second consensus diagnostic criteria for MSA (2008). All patients underwent detailed clinical assessment, neuropsychological tests and brain MRI. Comparison was done with healthy controls. The study showed significant cognitive impairment in MSA patients, compared to controls, especially in the domains of attention, memory and executive functions. There was no significant difference of cognitive dysfunction between subtypes of MSA. The severity of cognitive impairment correlated with longer disease duration and severity of illness.

34. Management of GCSE among elderly patients: a RCT of parenteral valproate and Levetiracetam. Dr. Devavrat Nene. Guides: Dr. Sanjib Sinha, Dr. P Satishchandra, Dr. Ravindranadh M Chowdary

35. Study of neural correlates of language switching in late bilinguals. Dr. Ketaki Patwardhan. Guides: Dr. PS Mathuranath, Dr. Vandana VP, Dr. Jitender Saini

The study focuses on neural correlates of language switching from Kannada to Telugu in late proficient bilinguals using functional MRI. For this a picture naming paradigm was used. Right-handed 12 men and 8 women who had learnt their language one (Kannada) at preschool age and second language (Telugu) at a mean age of 9.65 years underwent functional imaging. Bilateral caudate (BA48), left putamen right inferior and mid frontal gyri (BA10/45) activation was seen. It was observed that language switching is an interaction of cortical-subcortical circuitry.

36. Novel genetic locus in patients with Juvenile Myoclonic Epilepsy (JME): The role of recently identified epilepsy gene ‘EFCH1’ and ‘CHD2’. Dr. LG Vishwanathan. Guides: Dr. Sanjib Sinha, Dr. P Satishchandra, Dr. A Anand

37. Mutational analysis of mitofuscin gene (MFN2) in axonal charcot marie tooth disease. Dr. Ramesh Siram. Guides: Dr. Bindu PS, Dr. Yasha TC, Dr. Monojit Debnath, Dr. Madhu Nagappa (Funding by Golden Jubilee Fund, Dept. of Neurology and ICMR)

Isolated or predominant neuropathy due to mitochondrial cytopathy or mitochondrial neuropathy is emerging as an important subset of inherited neuropathies. Mutation in one gene Mitofuscin-2 (MFN2) encoding a mitochondrial membrane protein that promotes membrane fusion has emerged as the most common genetic defect causing axonal forms of Charcot-Marie-Tooth disease. This study aims to explore the role of MFN2 mutations in patients with inherited axonal neuropathy from India. A large cohort has been recruited over a two-year period. Analysis of mitofuscin genes in these phenotypically characterized axonal neuropathies will provide useful data on the genetic basis of axonal neuropathies from India.

38. VEP and blink reflex in migraine and tension headache. Dr. Ashok V Reddy. Guides: Dr. M Veerendra Kumar, Dr. Girish B Kulkarni

Blink reflex, a simple noninvasive test, done by stimulation of supra orbital nerve on one side of face, leads to two ipsilateral responses (R1 and R2) and one contralateral response (R2C). R2 and R2c represent the brain stem connections of nuclei. Lack of habituation and prolonged latencies to pain stimulus has been observed in migraineurs. Steady state VEP is being studied in the same group of patients. Potic blink reflex helps in analysing the link from occipital cortex to brain stem. Patients with migraine, TTH and controls are being recruited and studied.

39. A Prospective study of outcome in cerebral venous thrombosis patients and arterial ischemic stroke patients undergoing decompressive craniectomy. Dr. Chakradhar Reddy N. Guides: Dr. Girish B Kulkarni, Dr. Sampthy, Dr. Aravindha

40. FGF21 as a Biomarker for Mitochondrial Disorders: An explorative cross sectional hospital based study. Dr. Akshata Huddar. Guides: Dr. Bindu PS, Dr. Madhu N, Dr. Anita Mahadevan, Dr. Gayathri N (Funding by Golden Jubilee Fund, Dept. of Neurology, NIMHANS and ICMR)

Definite diagnosis of mitochondrial disorders is challenging to clinician as it requires a panel of tests which are expensive, need expertise and available only in a few centres. Serum FGF21 (sFGF21) is an emerging biomarker for diagnosis of mitochondrial disorder. This study aims at analyzing FGF21 in patients with mitochondrial disorders. Objectives of the study are: (i) to analyze Serum FGF-21 in patients with suspected mitochondrial disorders (ii) to compare FGF-21 expression in patients with mitochondrial disorder with other neuromuscular and healthy controls. This study is significant in terms of biomarker development in a disease with highly heterogeneous phenotypic expression.
A correlation study in sporadic amyotrophic lateral sclerosis with cerebral cortical thickness, phenotype, clinical rating scales and neuropsychological assessment. Dr. Wasim Mujawar. Guides: Dr. A Nalini, Dr. Suvanna Alladi, Dr. Chandrakrit Prasad, Dr. Jamuna Rajeswaran (Funding by Golden Jubilee Fund, Dept. of Neurology, NIMHANS and ICMR)

In this prospective case study 50 sporadic ALS cases evaluated at NIMHANS Neurology OPD services/Neuromuscular Disorders Clinic and admitted to wards will be enrolled. Clinical rating scales will be administered; and MRI and neuropsychological assessment will be carried out as per the predesigned protocol. The study will be carried out over a period of 18 months. Despite the earliest descriptions, about 150 years ago, ALS remains essentially a clinical diagnosis. There has been increasing evidence that in ALS patients, neuroimaging features may be diagnostic. MR Imaging will characterize the underlying brain abnormalities as ALS is a multisystem disorder. ALS presents different features among Indian patients and studying these aspects would be crucial.

Role of magneto encephalogram (MEG) as a noninvasive pre-surgical tool in localisation related drug resistant epilepsy patients. Dr. Asheeb A. Guides: Dr. Sanjib Sinha, Dr. P Satishchandra, Dr. Ravindranadh C, Dr. Thennarasu K

Principle of epilepsy surgery is to remove the epileptogenic zone accurately with minimal functional loss using various invasive and non-invasive methods. Some of the key non-invasive methods include EEG, VEEG, MEG, PET, etc. Temporal and spatial resolution of MEG makes MEG an excellent non-invasive tool for presurgical localization. Thus, this study aims to assess the efficacy of Magnetoencephalography as a pre-surgical investigation in epilepsy patients, and compare the MEG profile in patients with drug resistant epilepsy undergoing surgical management having seizure-free outcome versus those without surgery.

Clinical, genetic, imaging and neuropsychological profile of early onset progressive non-dominant cerebellar ataxias. Dr. Rashmi D. Guides: Dr. Pramod K Pal, Dr. Mohd Faruq, Dr. Ravi Yadav, Dr. Nettavathi M, Dr. Jitender Saini, Dr. Shantala Hegde (Funding by Golden Jubilee Fund, Dept. of Neurology, NIMHANS and ICMR)

Ataxia is defined as an inability to coordinate voluntary muscle movements that cannot be attributed to weakness of muscle and can be caused by involvement of the cerebellum, or peripheral sensory nerves and/or vestibular system. Ataxias may be acquired or hereditary. The hereditary ataxias may be autosomal dominant, recessive, sporadic, mitochondrial or X-linked. This study will focus on the clinical profile of non-dominant progressive cerebellar ataxias, the genetic nature of this category of diseases, along with the neuroimaging findings and neuropsychological profile of a subtype of these patients aged 5 to 16 years as well as the caregiver burden assessment of these patients.

Clinical profile and outcome of patients with acute ischemic stroke presenting within 4.5 hours to NIMHANS Hospital. Dr. Niranjan Prakash Mahajan. Guides: Dr. Girish B Kulkarni, Dr. Arvinda HR

The study focuses on the clinical profile and outcome of patients presenting with acute ischemic stroke and the barriers encountered in delivering effective treatment to them. Patients would be recruited after taking an informed consent and they would be subjected to all mandatory work up needed for a patient with acute ischemic stroke. Information regarding the patients’ demographic and clinical details would be collected. The data will be entered into predesigned case proforma and analysed.

Respiratory chain complex I deficiency disorders: A phenotype genotype correlative study. Dr. Chetan Chandranath Vekhande. Guides: Dr. Bindu PS, Dr. Madhu N, Dr. MM Srinivas Bharath, Dr. Gayathri N (Funding by Golden Jubilee Fund, Dept. of Neurology, NIMHANS and ICMR)

This study aims to examine the most common respiratory chain disorder namely, complex I deficiency. The objective of this study is to identify the genetic abnormalities in patients with complex I deficiency and to correlate the genetic findings with the phenotypic features. Exome sequencing has identified eight patients with variations in nuclear genes causing complex 1 deficiency. The phenotypes in these patients mainly included mitochondrial leukoencephalopathy.

Gain of function presenting as creative skills in patients with progressive cognitive dysfunction and their fMRI correlates-A descriptive study. Dr. Safwan Ahmed. Guides: Dr. SR Chandra, Dr. Subasree, Dr. Venkatsubramanium, Dr. Jamuna

Amyotrophic lateral sclerosis: (i) Optical Coherence Tomography and its correlation with Quantitative MR Imaging (ii) Assessment of sleep pattern. Dr. Neeraja Reddy. Guides: Dr. A Nalini, Dr. Ravi Yadav, Dr. Jitender Saini

A study of trait characteristics and functional connectivity in patients with Parkinson’s disease and impulse control disorders. Dr. P Muthukumran. Guides: Dr. Pramod K Pal, Dr. John P John, Dr. Jitender Saini, Dr. Shantala Hegde, Dr. Ravi Yadav, Dr. Nitish Kamble
53. Analysis of P300 using MEG and EEG in patients with Temporal lobe epilepsy due to hippocampal sclerosis with cognitive correlation. Dr. MA Mukheem Mudabbir. Guides: Dr. Sanjib Sinha, Dr. Suvarna Alladi, Dr. S Shivshankar, Dr. Ravindrnadh M Chowdary, Dr. N Mariyappa

54. Neural correlates of social cognition in classic FTD and FTD syndromes. Dr. Faheem Arshad. Guides: Dr. Suvarna Alladi, Dr. Pramod K Pal, Dr. SR Chandra, Dr. A Nalini, Dr. Subashree, Dr. Itjender Saini, Dr. Vandana

Frontotemporal dementia is a clinical syndrome characterised by profound changes in personality and social conduct and associated with circumscribed degeneration of the prefrontal and anterior temporal cortex. It includes bvFTD, nfvFTD, svFTD and overlap syndromes which include MND, PSP and CBD with a heterogeneous spectrum of clinical features. In the current study, patients with classical and overlap FTD syndromes will be assessed for social cognition, language, emotion processing, empathy, executive function, language, attention, visuospatial skills and praxis using various validated scales. The corresponding neural correlates of the deficits in FTD will be studied by use of voxel-based morphometry on MRI.

55. Clinical, electrophysiological and molecular characterization of hereditary demyelinating neuropathies. Dr. Akhilesh Kumar Shroti. Guides: Dr. Bindu PS, Dr. Madhu N, Dr. Yasha TC (Funding by Golden Jubilee Fund, Dept. of Neurology, NIMHANS and ICMR)

Hereditary neuropathies are the most common inherited neuromuscular disorders. Around 80 genes have been implicated in their causation so far and their number is increasing. The phenotype and genotype of patients with hereditary neuropathies is well characterized in many countries and this has implications for genetic counselling and therapeutics. This study intends to characterize and correlate phenotypic characteristics, electrophysiological parameters and genotype of Indian patients with hereditary neuropathies with specific emphasis on demyelinating sub-type. This will provide a robust database and platform for future research. This will also facilitate emerging therapeutic trials in these rare disorders.

Neuropathology

1. Development of neuroscience educational material for popularizing Neuroscience under Human Brain Bank, NIMHANS. Investigators: Dr. SK Shankar, Dr. Anita Mahadevan (Funding by ICMR)

In keeping with the mandate of developing Neuroscience Educational Material, a Histological Atlas of the Common Infections of the CNS, along with a set of 48 histological slides, depicting the pathological features and CD containing the Text and Photographs in the Atlas has been prepared. During the year, nearly 51 histological sets and more than 320 booklets with CDs were distributed among the medical colleges and pathology residents. The histological slide sets are provided only to the medical colleges teaching post-graduate students. In addition, Human Brain Bank has prepared and distributed nearly 41 posters (3X3 ft.) as a public awareness initiative and these are being used regularly in the local exhibitions organized by Indian Epilepsy Association and various schools.

2. Centre of excellence on molecular neuro-oncology (Phase II). Investigators: Dr. Vani Santosh, Dr. Sampath S, Dr. Arivazhagan, Dr.Yasha TC, Dr. Amey Rajan Savardekar, Dr. Nandeesh BN (Funding by DBT)

The project constitutes three parts: (i) Project 1: A multi-centric study to develop comprehensive molecular genetic panels for glioblastoma personalized therapy. The investigators will be validating some of the robust prognostic signatures of GBM that has been developed by their group in the previous projects (ii) Project 2: Unravelling genetic and epigenetic landscape of glioblastoma: Insights into therapy resistance and recurrence. This part of the work entails studying the molecular profiles (genetic and epigenetic) in paired samples of GBM. The investigators have already carried out genome wide methylation array on paired samples of GBM and identified novel markers of recurrence (iii) Role of IGFBP2 regulated beta-catenin in glioma and development of recombinant anti IGFBP2 single chain antibodies as a therapeutic option for Glioblastoma.

3. Mitochondrial respiratory chain disorders- Proteomic analysis of Complex I and Complex IV deficiencies. Investigators: Dr. Gayathri N, Dr. PS Bindu, Dr. MM Srinivas Bharath (Funding by ICMR)

4. Dysferlinopathies – Biochemical, morphological and proteomic analysis. Investigators: Dr. Gayathri N, Dr. Nalini A, Professor, Dr. MM Srinivas Bharath (Funding by ICMR)
The information on renal sex segment (RSS) which is an important accessory sexual organ of squamate reptiles is scarce and fragmentary. The secretions of the RSS of the male lizard might have a role in the sustenance and maintenance of spermatozoa in the female genital tract. There is a need for understanding the structure and function of the renal sex segment and other organs including brain during breeding and non-breeding seasons in squamate reptiles. The present study has been designed to examine ultrastructural seasonal variations of the cells and sexual granules, in terms of development, maintenance and regression correlated with plasma androgen concentration in the lizard Mubuya carinata. This study will provide comparative data that expand our knowledge of the ultrastructural variation of the RSS in male squamates, particularly lizards. The chemical characterization of the RSS secretions will be of great evolutionary significance.

This study will help to measure the synaptosomal proteomic changes of different important sections of the brain under normal and schizophrenic condition. The study would provide an insight into the synaptosomal proteins involved in schizophrenia and may help in understanding of the involvement of these tissues in neuropathological disorders.

Hippocampus, an important limbic system structure located in the medial temporal lobe plays an essential role in short and long-term memory, spatial navigation, and the regulation of emotional responses. Recent imaging studies provide substantial evidence of normal and different neuropathological conditions of hippocampus (Kang et al, 2015). However, proteome information using high throughput techniques can unveil thousands of novel proteins in hippocampus. Amygdala is known as a center for emotional processing, fear, motivation and memory consolidation (Mears et.al, 2016). Although a preliminary protein analysis has been reported in amygdala, extensive proteomic profile is still not explored. Temporal lobe, one of the four major lobes, is involved in the processing and analysis of auditory information. It communicates with the hippocampus and plays a key role in the formation of explicit long-term memory modulated by the amygdala. An extensive proteomic study has been reported on temporal lobe associated neurological conditions. However, proteomic research on undiseased temporal lobe is limited. Utilising the advantage of mass spectrometry based proteomic study the complex biochemical mechanisms involved in the development of these regions can be elucidated.

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Guillain-Barré syndrome (GBS) can be electrophysiologically classified into three major types: (i) acute inflammatory demyelinating polyradiculoneuropathy (AIDP), (ii) axonal neuropathy which is further divided into acute motor axonal neuropathy (AMAN) and acute motor sensory axonal neuropathy (AMSAN) and the less frequent subtype (iii) Miller Fisher Syndrome (MFS). Viral and bacterial infections are frequently noted before the onset of GBS. The frequently linked infections are due to Campylobacter jejuni, Epstein Barr virus, Cytomegalovirus, Mycoplasma and Human Immunodeficiency virus. Early diagnosis of GBS and thereby early treatment of the disease is required for better prognosis of the disease. GBS and paralytic rabies share common clinical symptoms such as asymmetrical ascending paralysis, dysfunction of autonomic nervous system, and elevated CSF protein with varying pleocytosis. Unlike GBS syndrome, rabies viral encephalitis is a fatal disease. Diagnosis of rabies requires examination.
of brain tissue obtained at autopsy or skin biopsy, antemortem confirmation through diagnosis is extremely difficult. Thus, it is of great diagnostic and therapeutic implication to identify biomarkers to distinguish between GBS and other clinically similar diseases.

The study aims to carry out comparative proteomic analysis of CSF and serum from patients with Guillain-Barré syndrome and paralytic rabies disease, which will further help in identifying novel biomarkers unique to these diseases.

10. Human Brain Proteome: Molecular insights into regional heterogeneity and neurological disorders. Investigators: Dr. TS Keshava Prasad, Dr. SK Shankar, Dr. Anita Mahadevan, Mr. Manjunath, Mr. Manish Kumar

A proteomic map of different sub-regions present in the brain is required for novel insights into the molecular mechanisms regulating brain development and to understand the pathophysiology of multiple forms of neurological disorders. The investigators present a draft map of human brain proteome using high-resolution fourier-transform mass spectroscopy. In-depth proteomic analysis of 30 anatomically distinct sites from human brain was carried out, which resulted in identification of proteins encoded by 12,351 genes. This by far, is the largest catalogue of proteins expressed in different human brain regions. When compared with the existing resources, 457 proteins were identified in human brain for the first time. In addition, 117 proteins were found to restrict to human brain and lack proteomic evidence in other tissues. The investigators further employed proteogenomic analysis approach and identified several novel translations from non-coding RNAs and pseudogenes. Subset of these novel translations were found to be expressed only in certain brain regions and domain analysis revealed their role in neurobiological processes. It is believed that this proteome map will provide the molecular insight into the regional heterogeneity of human brain and aid in better understanding of neurological disorders.

11. Role of C-Myc amplification and monosomy 6 in molecular subclassification of Medulloblastoma and their prognostic significance. Investigators: Dr. Nandeesh BN, Dr. Vani Santosh, Dr. Arivazhagan A (NIMHANS Intramural Funding/Grant)

Medulloblastoma (MB) is a common, clinically and biologically heterogeneous malignant childhood brain tumor. The predictive performance of current risk stratification, which is entirely based on clinical variables, needs to be improved because of the dismal prognosis of children with tumor relapse. Molecular stratification is presently the need of the hour for diagnosis and management of MB as the subgroups have differing incidence, molecular aberration and prognostic significance. A study indicating its utility and validation of the same is highly essential in a tertiary care centre (like NIMHANS) as the molecular data available in the literature are mainly from Western studies and few from the Indian subcontinent. The results of the study would expand the molecular knowledge and help in bringing this application for routine diagnostic services as well.

12. Proteomic analysis of brain regions from different developmental stages. Investigators: Dr. SK Shankar, Dr. TS Keshava Prasad, Faculty Scientist, Institute of Bioinformatics, Mr. Manish Kumar, PhD Scholar, Institute of Bioinformatics

Proteomic analysis of brain regions from different age groups will provide molecular insights into the gene expression dynamics involved in the brain development. Therefore, we selected four brain regions i.e., hippocampus, thalamus, cerebellum and dorso-lateral cortex from different age groups and carried out comparative proteomic analysis. Further bioinformatics analysis was carried out on the proteins, which selectively differentially expressed in a given age group. Proteins which were significantly down-regulated in foetal tissues and were observed to increase in abundance with age were found to be associated with neurobiological disorders like Alzheimer's disease, Parkinson's disease and Huntington disease. In addition, majority of the histone proteins were identified to be significantly overexpressed in fetal brain regions and their expression level reduced with increase in age. The investigators employed proteogenomic analysis to identify several non-coding RNAs and µORFs, which were selectively expressed in different age groups. The investigators believe that the study will provide a platform for future studies focused on elucidation of molecular mechanisms behind brain development and the associated neurobiological disorders.

13. Proteomic analysis of brain regions reveals complex biological basis for Schizophrenia. Investigators: Dr. SK Shankar, Dr. TS Keshava Prasad, Faculty Scientist, Institute of Bioinformatics, Mr. Gouravdey, Ph.D Scholar, Institute of Bioinformatics

Quantitative proteomic analysis of selected brain regions from schizophrenia resulted in identification of 200 altered proteins among pool of 5500 proteins identified. They are involved in inflammatory immune response, oxidative stress, neuronal architecture and mitochondrial dysfunction, retinoic acid and serine – threonine kinase signalling, extracellular matrix stability and energy metabolism have been reported. The altered protein expression is found in anterior cingulate cortex, dorso-lateral pr-frontal cortex, hippocampus and thalamus in schizophrenia.

14. Proteomic analysis of parathyroid glands. Investigators: Dr. SK Shankar, Dr. TS Keshava Prasad, Faculty Scientist, Institute of Bioinformatics, Mr. Manjunath Dammali, PhD Scholar, Institute of Bioinformatics

National Institute of Mental Health and Neuro Sciences
15. Proteomic analysis of adrenal glands. Investigators: Dr. SK Shankar, Dr. TS Keshava Prasad, Faculty Scientist, Institute of Bioinformatics, Mr. Kiran S, PhD Scholar, Institute of Bioinformatics

16. Proteomic profiling of sub regions of thalamus and hypothalamus. Investigators: Dr. SK Shankar, Dr. TS Keshava Prasad, Faculty Scientist, Institute of Bioinformatics, Ms. Oishi Chatterjee, PhD Scholar, Institute of Bioinformatics

17. Comparative proteomic analysis of hippocampal subregions, micro-dissected from formalin-fixed paraffin embedded tissues from cases of Normal, Parkinson's and Fronto-temporal dementia. Investigators: Dr. SK Shankar, Dr. TS Keshava Prasad, Faculty Scientist, Institute of Bioinformatics, Ms. Praseeda Mol, PhD Scholar, Institute of Bioinformatics

A unique technique to dissect sub regional areas of hippocampus using zoom microscope from formalin fixed slides from cases of normal, Parkinson’s and fronto-temporal dementia was standardized. The same cases were subjected for high temperature and pressure-assisted digestion of proteins, also known as pressure cycling technology (PCT), using a Barocycler has been standardised. This technique enables identification of many proteins by breaking of aldehyde bonds.

18. Identification of host-response in cerebral malaria patients using quantitative proteomic analysis. Investigators: Dr. Dr. TS Keshava Prasad, Faculty Scientist, Institute of Bioinformatics, Dr. SK Shankar, Mr. Manish Kumar, PhD Scholar, Institute of Bioinformatics

Proteomic profiling indicates axonal and myelin protein deregulation leading to inflammation, demyelination as a part of host response. There is over expression of autophagy, pexophagy, blood coagulation and platelet degranulation. Pathophysiological mechanism neede to be worked out.

19. Quantitative proteomics of cerebrospinal fluid from subjects with tuberculosis meningitis co-infected with human immunodeficiency virus. Investigators: Dr. TS Keshava Prasad, Faculty Scientist, Institute of Bioinformatics, Dr. SK Shankar, Ms. Sreelakshmi K, PhD Scholar, Institute of Bioinformatics

Pathway analysis of abundant protein in TBM had dopaminergic synaptic pathway, synaptic vesicle pathway and proteosome pathway was noted in TBM, TBM-HIV CSF found to be associated with PI3K-Akt and focal adhesion. Validation in progress.

20. Development of neuropathology lab sample tracker. Investigator: Dr. Vikas V (Funding by NIMHANS, IIIT-B)

A mobile-based android software package has being developed to track tissue samples real-time in the Department of Neuropathology, NIMHANS. The package is designed to automate the work-flow in the department of neuropathology there by enhance laboratory function and efficiency. The package is undergoing stage wise deployment in the Department of Neuropathology.

Students:

21. Gene expression profiling reveals PBK as a novel biomarker in the peritumoral brain zone of glioblastoma. Ms. Kruthika BS. Guides: Dr. Vani Santosh, Dr. Arivazhagan A, Dr. Yasha TC, Dr. Kondaiah P (Funding by DBT)

Immunohistochemistry showed (A), (B), (C) higer expression of PBK in PBZ compared to TC; (D), (E), (F) PBK expression was markedly higer in recurrent tumors as compared to primary (newly diagnosed) GBM.

(A) PBK knock-down showed a significant reduction in (B) cell proliferation, (C) migration and (D) invasion as compared to vector control. (E) Clonogenic assay showed a reduction in cell survial of PBK knockdown clones as compared to VC upon exposure to different doses of radiation. (F) No change in response to Temozolomide wa observed.

Gene expression profiling of the tumor core and peritumoral brain zone of glioblastoma along with normal brain tissue (performed as a part of DBT Phase I project) identified PBK (PDZ-Binding Kinase) as one of the genes over-expressed in the tumor core and PBZ as compared to Normal Brain tissue. PBK (PDZ-Binding Kinase)/TOPK (T-Cell Originated Protein Kinase), was one of the genes which was up-regulated in Tumour core (TC) and Peritumoral Brain Zone (PBZ) as compared to Normal Brain Tissue (NBT). PBK is known to be up-regulated in many types...
of cancers including glioblastoma, breast cancer, prostate cancer, lung cancer, colon cancer, etc. Hence, PBK was selected for further studies. PBK was validated using quantitative Real-time PCR followed by Immunohistochemistry for protein expression. Although not statistically significant, PBK protein expression was higher in the PBZ as compared to TC. Also, PBK expression did not have any correlation with patient survival and tumor recurrence. However, since its expression was higher in PBZ and is also known to have significant functional role in tumor progression in other systemic tumors, PBK was further studied for its functions in vitro. Upon knock-down of PBK expression in LN229 cells, we noted a significant reduction in cell proliferation, migration and invasion as compared to vector control. A reduction in cell survival of knockdown clones was observed when treated with increasing doses of radiation (0-6Gy). But no change in response to Temozolomide was observed.

The median log2 fold change of 2M transcript in GBM was statistically significant compared to control tissues (P<0.05). The protein expression levels of 2M by IHC was significantly higher in GBM tumors compared to control tissue (P<0.05).

The data showed that 2M is a novel biomarker and is highly expressed in GBM. This was validated with both TCGA and Rembrandt data. High 2M expression was associated with worst clinical outcome in patients with newly diagnosed GBM. Functional characterization of this molecule would elucidate its role in GBM pathogenesis.

23. Expression of SERPINA3 in glioblastoma and its association with tumour recurrence. Investigators: Ms. Vidya Nimbalkar. Guides: Dr. Vani Santosh, Dr. Arivazhagan A, Dr. Yasha TC, Dr. Kondaiah P (Funding by DBT)

In the previous DBT sponsored project, differentially regulated genes in tumour core and peritumoural brain zone (PBZ) compared to control (non-neoplastic brain tissue) were identified on microarray analysis. From the list of top up-regulated genes found both in core and PBZ, we have selected nine genes which are found to have role in cancer but not studied in glioblastoma based on literature.

mRNA validation was carried out for these nine genes (namely, SERPINA3, CKS2, NUSAP1, CHI3L2, FCGBP, PTMA, CDC45L, G3BP1, EIF3M) by qRT-PCR on GBM tumour core and PBZ (n=27) and control samples (n=20). Protein expression of SERPINA3 was studied by IHC on the above mentioned cohorts. IHC was further carried out on an external GBM cohort (n=91), anaplastic astrocytoma (AA, n=38) and diffuse astrocytoma (DA, n=28). IHC was also performed on paired samples (newly diagnosed and recurrent GBM, n=20 pairs). Finally, SERPINA3 expression was correlated with survival on a separate retrospective GBM cohort (n=71), who underwent uniform treatment.

Expression of SERPINA3, (A) mRNA expression in GBM and normal samples in our cohort, (B) and (C) in TCGA datasets, (D) Protein expression across the grades of glioma (E) mRNA expression across the grades in Rembrandt dataset. (F), (G) and (H) showing IHC images for cytoplasmic, nuclear and stromal staining pattern respectively. (I) and (J) showa staining pattern in primary and recurrent GBM respectively.

Out of nine, five genes namely, SERPINA3, CKS2, NUSAP1, CHI3L2 and FCGBP validated with high fold changes on our cohort as well as on TCGA and Rembrandt datasets at mRNA level.
24. Clinically relevant genetic and epigenetic molecular biomarkers in adult glioblastomas – prognostic relevance. Investigators: Dr. Shilpa Rao; Gudies: Dr. Vani Santosh, Dr. Arivazhagan

Glioblastoma (GBM) is the most common primary brain tumor accounting for 40-50% of all primary brain tumors and 50-60% of all glial tumors. It is also the most aggressive intracranial neoplasm with poor response to currently available treatment modalities. Although, all glioblastomas are histologically categorised into grade IV tumors they vary widely in their molecular profile, clinical profile and importantly in the response to therapy. Various studies have utilised molecular biomarkers to classify GBM into clinically relevant groups. The clinical relevance of these molecular subclasses of glioblastoma although studied in various cohorts, is not well established. Hence, the present study was undertaken to identify clinically relevant molecular biomarkers in GBM. Adult patients (>18 years) with histologically proven GBM, subtotal or near/ gross-total excision of tumors done and with availability of clinical follow-up are included in the study. Various IHC markers, FISH, mPCR and sequencing methods are being employed for the subgrouping of GBM. Out of this cohort, 17 cases (15 GBM and 2 Gliosarcoma), where fresh tissue was available were subjected to whole genome gene expression analysis. Unsupervised hierarchical clustering revealed that GS formed a distinct cluster compared to GBM. Pathways of mesenchymal transition were enriched in GS. Both the cases of GS had mesenchymal profile on subgroup analysis compared to all 4 subgroups in GBM.

25. Morphological spectrum of supratentorial anaplastic ependymomas – the great masquerader. Dr. Pooja Chavali; Guide: Dr. Vani Santosh

The aim of the study was to examine the demographic, histological and molecular characteristics of supratentorial anaplastic ependymomas (ST-EPN). All the GFAP and EMA positive high grade tumors in supratentorial compartment diagnosed as anaplastic ependymoma in NIMHANS (from January 2011 to June 2016) were evaluated. The demographic data, clinicoradiological details, histomorphology and immunohistochemical (IHC) profiles, management and follow up data were collected and additional IHC performed. A total of 239 cases were diagnosed as anaplastic ependymoma during the study period, of which 112 (46.8%) were in supratentorial compartment. The final cohort comprised 65 cases. L1CAM profile (surrogate for RELA fusion) association was studied with regard to all parameters. Clear cell morphology, calcifications, p65 IHC showed statistically significant positive association.

L1CAM positive ST-EPNs were predominantly frontoparietal, more common in children and have clear cell morphology and are strongly associated with p65 (a downstream pathway for NF-KB signalling by RELA fusion).

26. A simple algorithmic approach utilizing histology and immunohistochemistry for the current classification of Diffuse Glioma in a resource limited set-up. Dr. Rajeswarie RT; Guide: Dr. Vani Santosh

The current WHO 2016 classification of diffuse gliomas has undergone a paradigm shift with emphasis on the molecular parameters. The aim of this study was to establish a practical algorithmic approach in the classification of diffuse gliomas in such a set-up. Integrating histology with IHC, based on WHO 2016 guidelines, the investigators derived the following groups: i) DA/AA, ii) ODG/AO- NOS and iii) DG/AG- NOS. Integrating histology and IHC, they were reclassified into DA (55.5 %), ODG –NOS (37.6%) and DG- NOS (6.9%). Integrating histology and IHC, they were reclassified into AA (45.7%), AO –NOS (47.9%) and AG– NOS (6.3%). FISH performed in ODG/AO NOS, 100% cases were co-deleted. FISH performed in DG/AG NOS, 22.2% were co-deleted and 77.8% were non co-deleted.

The investigators recommend that when there is limitation to perform FISH, restricting 1p19q assay to DG/AG-NOS and propose a meaningful diagnostic algorithm for diffuse glioma integrating histology and IHC in a resource limited setting (like in India).

27. Histological characterization of epithelioid glioblastoma. Dr. Parul Jain; Guide: Dr. Vani Santosh
Annual Report 2016-2017

Epithelioid Glioblastoma (E-GBM) is a newly introduced variant of GBM in the WHO 2016 classification of tumors of CNS. The investigators aimed to study the histological and molecular characteristics of these rare tumors. Four cases of E-GBM in year 2016 were included. The cases were chosen on the basis of histologic characteristics and BRAF V600E mutation status. MGMT methylation status was assessed by methylation specific PCR method.

All cases had features of a GBM, composed of epithelioid cells contributing >50% of the tumor population. Microvascular proliferation was observed in one case. Necrosis was confluent in the majority (75%). Two cases exhibited prominent angiocentric arrangement of tumor cells. One case recurred after 13 years showed histological evidence of evolution from PXA.

Majority showed moderate patchy staining for GFAP. All were diffusely positive for S100, BRAF V600E. PCR for MGMT promoter methylation showed unmethylated status of all cases. The present study details the histological, immunohistochemical and molecular characteristics of a small series of E-GBM, encountered in young adults. While all cases harboured BRAFV600E mutation and were negative for IDH1(R132H), a variable immunoprofile for other markers was seen. All cases were unmethylated for MGMT. The study suggests that E-GBMs could either denovo or progressive tumors evolving from a pre-existing PXA.

28. Mitochondrial DNA copy number variation in Glioblastoma and its effect on sensitivity to radiation and chemotherapy - A clinical-molecular characterization. Ms. Sravya Palavalasa. Guides: Dr. Sampath S, Dr. Vani Santosh, Dr. Arivazhagan A (Funding by ICMR)

The objectives of the study are (i) To compare mitochondrial DNA copy number of Glioblastoma tissue with normal control (ii) To assess the copy number changes occurring in the peripheral blood in Glioblastoma patients while undergoing treatment (iii) To understand the role of nuclear genes in the regulation of mtDNA copy number in Glioblastoma pathogenesis. One of the nuclear regulating genes, PGC1A was studied on GBM tumors, infiltrating front of GBM, normal and ischemic brain tissue. It was seen that PGC 1 alpha expression in cortical neurons surrounding glioblastoma possibly improves the survival in the patients who complete RT and CT by increasing the mitochondrial density and hence helping them overcome the hypoxia induced damage.

29. Immunohistochemical and immunoblot analysis of autosomal recessive limb girdle muscular dystrophy (AR-LGMD)- Emphasis on Dysferlinopathies. Mrs. Sunitha B. Guides: Dr. Gayathri N, Dr. MM Srinivas Bharath, Dr. Nalini A, Dr. Thangaraj K (Funding by DST)

A total of 213 cases with clinical and histological evidence of muscular dystrophy analysed by immunohistochemical and western blot analysis revealed dysferlinopathy (LGMD 2B) to be the commonest form (45.1%) followed by -DG deficiency (15%), calpainopathy (11.7%), and sarcoglycanopathy (9.9%). Rare forms encountered include telethoninopathy (3.3%), POMT 1 deficiency (2.8%), TRIM 32 deficiency (1.4%) and titinopathy (0.9%). Genetic analysis done on 37 cases of dysferlinopathy showed pathogenic mutations in 18 cases. Amongst them novel mutations were found in four cases, one case had one novel and one reported mutations while known mutations in others (13 cases). Proteomics study carried out in dysferlinopathy revealed widespread markers of mitochondrial damage in dysf. Majority of the proteins (80) of mitochondrial respiratory complex subunits, assembly factors, Krebs cycle proteins and antioxidant proteins were down-regulated in dysf. The study highlights mitochondrial dysfunction with emphasis on altered molecular dynamics in dysferlinopathy.

A case of LGMD2B( dysferlinopathy) showing loss of immunolabeling to dysferlin protein, absence dysferlin band and pathogenic splice site variations in dysferlin gene.
30. Protein aggregate myopathies- genetic, proteomic and pathophysiological analysis and dissection of disease etiology using Drosophila model. Mrs. Rashmi S. Guides: Dr. Gayathri N, Dr. A Nalini (Funding by DST)

Protein aggregate myopathies (PAM) are a group of clinically and genetically heterogeneous muscle disorders characterized morphologically by abnormal accumulation of proteins in muscle fibers. These conditions are classified based on the gene mutation, morphology and composition of protein aggregates in muscle cells. The various proteins aggregate that are sarcomeric/extrasarcomeric proteins like- β-Actinin, Actin, β-B Crystallin, Filamin C, Myotilin, Myosin, BAG3, ZASP, Titin, Desmin, Plectin, Syncoilin, Syneimin, Dystrophin, Sarcoglycans, Ubiquitin, Neural cell adhesion molecule, Gelsolin, TAR DNA-binding protein 43, heat shock protein 27 and DNAJB2.

Morphologically, nineteen cases showed evidence of proteins aggregation in the skeletal muscle biopsies. Immunohistochemistry revealed positive labeling to several sarcomeric proteins. Two of the cases (mother & son) with FHL1 aggregation subjected to genetic analysis revealed FHL1 mutation (pathogenic variant, c 449G>A, exon 5, X-chromosome). Transgenic fly lines are generated by cloning the FHL1 mutation to understand the pathophysiological changes.

A case of protein aggregate disorder showing intensely stained bodies (MGT) labeled with ZASP and FHL1

31. Development of zebrafish as model system to study the etiology and patho-physiology of actin mutations those cause nemaline rod myopathies in human. Mr. Debasish Roy. Guides: Dr. Gayathri N, Dr.Yasha TC (Funding by CSIR)

Mutations in the sarcomeric protein encoding genes are primarily responsible for a host of diseases including Nemaline rod myopathies. Among these, skeletal alpha actin (ACTA1), which is the principle actin isoform in adult skeletal muscle, forms the core of the thin filament. It interacts with many other sarcomeric proteins and also responsible for the production of contractile force. So far, 177 mutations have been reported in the ACTA1 gene, which lead to development of myopathic condition in humans. Many in vitro studies done to understand the disease etiology have been futile. In this study, two actin mutations (H40Y and V163L) which lead to development of nemaline rod myopathy (NRM), and intra-nuclear rod myopathy (IRM) will be generated in the zebrafish to dissect the etiology and patho-physiology of these disorders. The isoform switching of two actin isoforms i.e. skeletal (ACTA1) and cardiac (ACTC1) actin and the expression pattern (both transcript and protein level) of these two proteins during their development, starting from day 1 post fertilization to 18 months post fertilization has been carried out.

32. Effects of temozolomide and its combination with lonidamine on proliferation, cytotoxicity, ultra-structure and radiation response of malignant human glioma cells. Mrs. Kalyani Kumari. Guides: Dr. Vijay K Kalia, Dr. BK Chandrasekhar Sagar, Dr. KVL Narasingarao (Funding by DBT)

Primary cells of high grade gliomas obtained from tumour biopsies were cultured in EMEM + 20% FBS. Ultrastructural studies (TEM) showed that the untreated glioma cells showed rounded nucleus with a prominent nucleolus, plasma membrane and lots of microvilli like processes. TMZ (10 and 20µM, 4hrs) treated cells showed nuclear damage (indented nuclei, nuclear fragments and smooth plasma membrane. Exponentially growing cells as monolayer were fixed in Methanol-Acetic Acid and stained with 0.002% Acridine Orange. These cells showed variable frequencies and cells, and micro nucleation, even without any cytotoxic treatments. The damage was increased after TMZ and irradiation (1-2 Gy Co60 β ray). Ultrastructural studies revealed more cellular damage in combination group compared to single drug treatment in the explant culture.

33. Study of the neuronal and glial changes in olfactory pathway with age. Dr. Monali Dilip Sonawane, MGM Medical College, Navi Mumbai. Guides: Dr. Aruna Mukherjee, Prof & HOD, Department of Anatomy, MGM Medical College, Navi Mumbai, Dr. Anita Mahadevan

Olfactory dysfunction is an early and common sign in various neurodegenerative diseases like Alzheimer's disease, Parkinson's disease and cognitive disorder which involve pathological changes in olfactory pathway
and other areas of the brain. The little is known about the changes occurring in the olfactory pathway during the normal ageing process. This study proposes to evaluate the alterations of neuronal and glial cell population in olfactory bulb, olfactory tract and olfactory cortex, hippocampus and prefrontal cortex in different age groups and evolution of neurodegenerative changes with age to better understand the morphological substrate of physiological changes seen with ageing in the olfactory pathway.

34. Ageing changes in hypothalamus. Dr. Pravin Rathod, MGM Medical College, Navi Mumbai. Guides: Dr. Aruna Mukherjee, Prof & HOD, Department of Anatomy, MGM Medical College, Navi Mumbai, Dr. Anita Mahadevan

Normal ageing is associated with disturbances in sleep wake circadian rhythm, alteration in temperature tolerance, reduction in food intake, and disturbance in fluid and electrolyte homeostasis. Hypothalamus is the master gland which controls all the above function through the hypothalamo-pituitary-adrenal axis. Although several studies have evaluated the functional aspects of hypothalamic function, very few have evaluated the structural changes in human hypothalamus with age.

This study intends to detect histomorphologic changes with normal ageing in the hypothalamic nuclei of different age groups to understand the morphologic substrate underlying physiological ageing in hypothalamus.

**Neurosurgery**

1. Effect of Yoga and Meditation on hippocampal volumetry and memory among people with chronic drug resistant mesial temporal lobe epilepsy: A comparative study before and after epilepsy surgery. Investigators: Dr. Malla Bhaskara Rao, Dr. Arivazhagan A (Funding by SATYAM)

The proposed study aims to evaluate the effect of yoga and meditation on epilepsy and hippocampal volumes. The derived knowledge will greatly help in planning cognitive and lifestyle training following surgery for drug resistant epilepsy.

2. Identification of traumatic brain injury (TBI) biomarker. Investigators: Dr. Indira Devi B, Dr. Dhananjaya I Bhat, Dr. Dhaval Shukla, Dr. Rita Christopher, Dr. Subhas Konar, Dr. Nishanth Sadashiva (Funding by ICMR)

3. Randomized Evaluation of Surgery with Craniectomy for patients Undergoing Evacuation of Acute Subdural Haematoma (RESCUE-ASDH). Investigators: Dr. Indira Devi B, Dr. Dhananjaya I Bhat, Dr. Nishanth Sadashiva, Dr. Sampath S, Dr. Prabhruraj AR, Dr. Dhaval Shukla, Dr. Subhas Konar (Funding by Cambridge University Hospitals NHS Foundation Trust)

4. Genetics of lumbar degenerative disc disease. Investigators: Dr. Dhananjay I Bhat, Dr. Dhaval Shukla, Dr. Chetan (Funding by DST)

5. Changes in pain pathways and cortical plasticity after Yoga for back pain – A randomized controlled study. Investigators: Dr. Dwarakanath S, Dr. Shivaram V, Dr. Saini J, Dr. Karthikeyan V (Funding by DST-Satyam)

6. Collaborative Indian Neurotrauma Effectiveness research in TBI: (CINTER TBI) A prospective longitudinal observational study. Investigators: Dr. Dwarakanath S, Dr. Dhaval Shukla, Dr. Aravinda R (Funding by University of Oxford and University of Belgium)

7. Development of Indigenous Implantable pulse generator for Deep Brain Stimulation (DBS Battery): Jointly with DEBEL and Institute for Naval Technology, Visakhapatnam. Investigators: Dr. Dwarakanath S, Dr. Pramod K Pal, Dr. Ravi Yadav (Funding by DEBEL)

8. Development of an Indigenous robot bases stereotaxy system for neurosurgery: Bhabha Atomic Research Center, Mumbai. Investigators: Dr. Dwarakanath S, Dr. Prabhruraj AR (Funding by BARC)

9. Multi institutional network programme on molecular neuro oncology between NIMHANS, IISc, Bengaluru and SSSIHMS, Bengaluru (Phase 2). Investigator: Dr. Arivazhagan A (Funding by DBT)

This programme consisted of three inter-dependent projects, which aimed to understand the genetic and epigenetic mechanisms in pathogenesis and growth of glioblastoma. Various molecular methods are employed for the same, which are carried out in three clinical centres and two labs. A large number of novel molecular findings related to pathogenesis and therapy response in GBM have been identified. The second phase, which started from September 2016, focuses on validating various gene signatures in GBM for prognosis and classification, and studying the epigenetic landscape of GBM. The study also aims to examine the molecular characteristics of recurrent GBM and identify the possible mediators of therapy resistance.

10. Comparison of two techniques of handling vessel ends during micro-vascular anastomoses. Investigator: Dr. Nupur Pruthi (NIMHANS Intramural Funding/Grant)

11. Development of artificial intelligence tool utilizing clinical neurological examination for clinical diagnosis in neurosurgical patients. Investigators: Dr. Vikas V, Dr. Sampath S, Dr. KVL Narasinga Rao, Ms. Sindhu MG (Funding by DST)
The project aims to mimic physician logic using artificial intelligence techniques to evolve software packages for the diagnosis of neurosurgical diseases. Emphasis is on the arrival at diagnosis from objective clinical findings, which are re-producible.

12. Development of anthropomimetic assistive electromechanical devices for upper limb. Investigator: Dr. Vikas V (Funding by Central Sector Scheme-Research on Disability Related Technology, Products and Issues)

The project aims to develop a wearable device for patients with neuromuscular disabilities so as to restore function of the hand. The device can serve as an exercise device, dynamic splint and a rehabilitation device. The device aims to support the complete range of hand functions for a wide variety of patients suffering from hand related neuro-muscular disability. The technology has been developed in-house and is under consideration for IPR.

13. Development of hyper flexible, hyper-redundant minimally invasive robot platform. Investigators: Dr. Vikas V, Dr. KVL Narasinga Rao, Dr. Sampath S (Funding by IIIT-B)

The platform attempts to develop a common platform for open and minimally invasive brain surgery, with specifications which are designed for intraventricular and base of skull approaches. Two prototypes have been developed to demonstrate proof of concept. The third prototype attempts miniaturization. Tool kit and visualisation systems are being developed independently. The technology has been developed in-house and is under consideration for IPR.

14. Development of ultrasound based applications for intracranial applications and volume imaging and ranging. Investigators: Dr. Vikas V, Dr. KVL Narasinga Rao, Dr. Sampath S, Dr. Aravind (Funding by IIIT-B)

Ultrasound technology has lagged behind MR imaging and CT imaging in terms of neurosurgical applications. A fundamental relook at the image acquisition and processing is being attempted to develop novel tool sets for neurosurgical applications. The devices also incorporate ranging for intracranial ranging of robotic devices. Development of proof of concept device is underway. Parallel work is being done on algorithm development and integration to robotic platform.

15. Effect of pentoxyphylline on microvascular flow pattern in experimental cerebral vasospasm model. Investigators: Dr. Nupur Pruthi, Dr. Prabhuraj AR (NIMHANS Intramural Funding/Grant)

Students:

16. Focal cortical dysplasia presenting with chronic drug resistant epilepsy: a study of clinical, electrophysiological, neuro-imaging, neuropsychological, surgical & histopathological features: and correlation with the seizure and quality of life. Dr. Jitender Chaturvedi. Guides: Dr. Malla Bhaskara Rao, Dr. Sanjib Sinha, Dr. Anita Mahadevan, Dr. Jamuna Rajeswaran, Dr. Nupur Pruthi, Dr. Jitender Saini

The study was aimed to determine outcomes of surgery in terms of seizure control and degree of improvement in quality of life (QOL) among patients who had Drug resistant epilepsy (DRE) secondary to Focal Cortical Dysplasia (FCD). Authors also attempted to identify various predictive factors for better seizure cure/control. At median duration (3.7 years) after surgery, 84% of patients had Engel's Ia outcome. QOLIE-89 scores improved from 38.33±4.7 (31.14-49.03) before surgery to 75.21±8.44 (56.49-90.49) after surgery at last follow-up. Seizure worry, emotional well-being, medication effects, role limitation due to emotional factors and overall quality of life were the domains with maximal and most significant improvement. An early age of the patient (<20 years) at surgery (78.26% Vs 62.96%, p=0.013), lower pre-op score (<9) on seizure severity scale (90.00% Vs 56.66%, p=0.012), focal discharges without propagation on ictal V-EEG(90.50% Vs 66.70%, p<0.001), absence of early post-op seizures within 24 hours after surgery(81.00% Vs 12.50%, p<0.001) and Type II FCD (76.92% Vs 62.58% p=0.045) were the strongest significant variables to predict Engel IA outcome.

17. Pediatric brain: white matter volumetry and cortical plasticity in response to Birth Brachial Plexus Injury (indirect insult to the brain) versus Pediatric Traumatic Brain Injury (direct insult to the brain). Dr. Kislay Kishore. Guides: Dr. B Indira Devi, Dr. AK Gupta (Partial Funding by ICMR)

This MRI-based study was performed on young children who had suffered obstetric brachial plexus palsy, and the results were compared with that in healthy controls. The results indicated that even a peripheral injury in a developing brain results in corpus callosum atrophy and disruption of transcallosal interhemispheric connections and reduced activation of sensorimotor network in the ipsilateral hemisphere also. This suggests a more global insult, even in a seemingly peripheral and indirect injury to the developing brain than commonly understood.

18. A study of outcome in craniovertebral junction pathologies following posterior fusion and screw fixation. Dr. RAjesh Krishna. Guides: Dr. S Sampath, Dr. Dhananjaya I Bhat, Dr. Nupur Pruthi

The objectives of the study were: (i) to identify the indications for posterior screw-rod fixation/fusion surgeries in the Craniovertebral Junction (CVJ) (ii) to assess outcome and complications, and (iii) to identify factors affecting the same. Patients who underwent CVJ posterior screw-rod construct surgery at NIMHANS between August 2013 and August 2015 were followed up for a minimum period of 1
year. The clinical outcome measures were Recovery Rates for Nurick Grade (NGRR), Modified Japanese Association Score (mJOARR) and Neck Disability Index (NDIRR). The radiological outcome encompassed bony fusion, reduction and re-dislocation of AAD/BI.

A total of 110 patients were included; out of which 53.6% had congenital causes of CVJ instability. The median NGRR, mJOARR and NDIRR were 50.00%, 77.50% and 53.55% respectively; 90.8% of screws were in good position and 83.6% of cases attained normal CVJ alignment in postoperative scans. Better neurological recovery was seen in patients with traumatic instability, absence of BI, better preoperative functional status and absence of bowel/urinary symptoms. Posterior screw-rod construct in CVJ is a safe and effective procedure with good long-term outcome.

19. Study of predicting the ideal ventricular freehand pass trajectory using OSIRIX software and the role of occipital shape variations. Dr. Harsh Deora. Guides: Dr. Npur Pruthi, Dr. KVI Narasinga Rao, Dr. Jitender Saini

Cannulation of the lateral ventricles via a Frazier Point approach is a common neurosurgical procedure. However, a lack of standard procedures or techniques for this cannulation leads to wrong or undesirable catheter positioning. The purpose of the study was to find out the ideal entry point, ideal forehead fiducial point and ideal angulation of the ventricular catheter required for the Frazier point approach to lateral ventricle. The investigators also looked for the variations in these parameters with changes in skull shapes. Scans required were recruited from NIMHANS PACS database, consisted of two groups- with and without hydrocephalus. These were viewed on OSIRIX DICOM VIEWER allowing the images to be viewed in all three planes and were then reconstructed along with estimation of the ideal shunt trajectory, 90 degree trajectory and usual midline trajectory. Fifty human-cadaveric skulls were used to measure morphometry and corroborate with our radiological findings. It was found that as the AP/Width ratio increases the external aim point (fiducial) needs to be placed higher with the distance of burr hole also increasing from inion. Rounder or more dolichocephalic skull dictates a 90-degree approach to be better especially as the first pass technique. Solution to a problem can only be identified after acknowledging that the problem exists. The “magic point” does not exist. Neither can there ever be an external landmark uniformly applicable for all skulls. A tailored strategy based on the shape of the back of the head for occipital approaches will give the best result.

20. Outcomes of management of large and giant intracranial aneurysms. Dr. Jnana Bala Parameshwara Rao. Guides: Dr. Dwarakanath S, Dr. Hima Shriniwas Pendharkar

21. The role of stem cells in sciatic nerve regeneration in rats with cold preserved allografts: functional and histological outcome. Dr. Bharat P Shinde. Guides: Dr. Dhananjaya I Bhat, Dr. Indrani Dutta,

Traumatic injuries are the most common cause of peripheral nerve injuries leading to functional impairment of limb. Autologous nerve grafts are considered gold standard for bridging the nerve gaps. Despite advances in techniques, and understanding of pathophysiology of peripheral nerve injuries, the overall outcome following nerve repair is far from satisfactory. Major causes of poor outcome are inflammation, perineurial scar formation, lack of adequate neurogenic growth factors leading to poor regeneration. Stem cells have shown promising results by decreasing inflammation, secreting neurotrophic growth factors and guiding the regenerating neurons. This study evaluates the safety, efficacy of dental pulp stem cells in functional outcome of peripheral nerve injuries in rats.

22. Molecular alterations in pediatric glioblastoma and their prognostic significance. Dr. Alok M Uppar. Guides: Dr. Arivazhagan, Dr. Prabhuraj AR, Dr. Vani Santosh

Pediatric GBM is a rare entity involving distinct and different pathogenesis and molecular pathways compared to adults. In this study, the investigators were able to identify a set of molecular biomarkers which carry prognostic implications and could be the molecules for future targeted therapy.

23. Role of decompressive laminectomy in the management poor grade cervical compressive myelopathy. Dr. Sunil Malagi. Guides: Dr. Dhaival P Shukla

24. DTI changes in the patient with drug-resistant epilepsy. Dr. Prashanth Singh. Guides: Dr. Malla Bhaskara Rao, Dr. Arivazhagan, Dr. Jitender Saini.

Surgery is usually considered for patients having drug-resistant epilepsy, but as many as one third of patients having focal cortical dysplasia with epilepsy have normal MRI. DTI can detect subtle structural changes in the brain which are normal on other sequence. Also with DTI tractography white matter tracts can be traced, which helps in deciding safe approach for surgery. The investigators are exploring the application of DTI in patients having drug-resistant epilepsy undergoing surgery at NIMHANS.


26. Cerebral perfusion changes before and after decompressive craniectomy in patients of cerebral venous thrombosis. Dr. Varun Kumar Reddy. Guides: Dr. Sampath S, Dr. Dwarakanath S, Dr. Vikas V, Dr. Girish B Kulkarni, Dr. Arvind, Dr. Keshav Kumar, Dr. Gopal Krishna

27. Do genetic factors play a role in pathophysiology of cervical spondylotic myelopathy? A case–control study. Dr. Diptiranjan Satapathy. Guides: Dr. Dhananjaya I Bhat, Dr. GK Chetan
Cervical spondylotic myelopathy is a progressive spine disease and the leading cause of spinal cord dysfunction world-wide. Disc degeneration, associated spondylosis and hypertrophy of ligamentum flavum are the three static factors that may lead to the narrowing of spinal canal. The exact etiology for CSM is not known. Genetic predisposition has been suggested due to presence of familial occurrence of CSM. Currently in India there is no study regarding the genetic susceptibility for the development of CSM. The objective of the study is to identify any association between polymorphisms in interleukin, collagen and apolipoprotein in CSM.

28. Differential expression of Cathepsin b, Tissue inhibitor of metalloproteinases 4, Collagen 1a2, b-cell lymphoma 2(bcl-2), bcl-2 associated x Protein (bax) and 1-anti trypsin genes in intra cranial aneurysmal wall. Dr. Gaurav Tyagi. Guides: Dr. Dwarakanath Srinivas, Dr. Vani Santosh, Dr. Sanjeev Jain

The objective of the study is to explore the expression of Cathepsin B, Tissue Inhibitor of Metalloproteinases 4, Collagen 1A2, B-cell lymphoma 2 (bcl-2), Bcl-2 Associated X protein (bax) & αmp; 1-Anti Trypsin genes in intracranial aneurysmal wall and compare it with normal superficial temporal artery of patients with ruptured or un-ruptured intracranial aneurysms that have undergone surgical clipping. These wall samples will be analysed by RT-PCR and Immunohistochemistry to see gene expression. The study also focuses on correlating the age of the patient, preoperative clinical status, size of the aneurysm, incidence of vasospasm and various other variables with the expression levels of the individual genes and finding out the significant association.

29. Autonomic function in insular glioma - An explorative study. Dr. Ajith Mishra. Guides: Dr. Dhaval Shukla, Dr. Satyaprabha

Autonomic nervous system (ANS) dysfunction is very well known in stroke involving insula. It has known to cause significant morbidity as well as mortality. There is no study till date showing correlation between insular glioma and ANS dysfunction. This study plans to identify any subclinical autonomic dysfunction in insular glioma and try to assess their clinical relevance.

30. Evaluation of quality of life and cognitive profile in children with malignant posterior fossa brain tumours. Dr. Ujwal Yeole. Guides: Dr. Arivazhagan, Dr. Shantala Hegde, Dr. Prabharaj AR

Posterior fossa tumours are common in pediatric age group. Following advances in surgery and adjuvant therapy survival of these patients is increasing. But along with surgery adjuvant therapy affects quality of life and cognition in these children. The aim of this study is to assess the impact of these adjuvant therapies in Indian population.

31. The relationship of dentate nucleus with the pyramid of vermis: a microneurosurgical anatomical study. Dr. Santhosh Kumar SA. Guide: Dr. Napur Pruthi

The dentate nucleus, the largest of the deep cerebellar nuclei, is buried within the cerebellar white matter adjacent to the fourth ventricular roof and vermis. Dentate nucleus is involved in several pathologies involving cerebellum like hematomata, metastasis, etc. Dentate nucleus may be subject to injury during surgical interventions involving the cerebellum, brainstem, cerebellar peduncles, and fourth ventricle. Injury to dentate nucleus during the various surgical interventions or in the various pathological processes can lead to debilitating side effects. In this study, the investigators try to identify the position of dentate nucleus in relation to pyramid of vermis.

32. Traumatic intracerebral hemorrhage early surgery versus conservative management - A randomised control study. Dr. Rajesh TS. Guides: Dr. KVL Narasinha Rao

This is a hospital-based observational mixed study (retropositive and prospective) which observes and analyses the surgical outcomes of a relatively new approach called endoscopic endonasal extended approach. This is mainly used to treat skull base lesions which are difficult to access through the transcranial approach. The investigators focus on analysing the outcomes of the approach in terms of deficits, post-op residue, recurrence, CSF leak, etc.

33. Surgical outcomes of extended endoscopic approaches. Dr. Sandeep Kandregula. Guides: Dr. Sampath S, Dr. Vikas V

This is a hospital-based observational mixed study (retropositive and prospective) which observes and analyses the surgical outcomes of a relatively new approach called endoscopic endonasal extended approach. This is mainly used to treat skull base lesions which are difficult to access through the transcranial approach. The investigators focus on analysing the outcomes of the approach in terms of deficits, post-op residue, recurrence, CSF leak, etc.

34. Cortical plasticity following brachial plexus injury: A resting state fMRI study. Dr. Vikram Singh. Guide: Dr. B Indira Devi

35. MEG localization of eloquent cortex lesions: Implications in neurosurgical interventions. Dr. Rakesh Kumar Mishra. Guides: Dr. Malla Bhaskara Rao, Dr. Arivazhagan, Dr. Sanjib Sinha, Dr. Mariyappa, Dr. M Jayaram

36. Clinico-radiological correlation of outcome in subarachnoid hemorrhage. Dr. Akshay Vijay Kulkarni. Guides: Dr. Dhaval P Shukla, Dr. B Indira Devi

The study will assess subarachnoid patients from presentation to follow-up visits and find out the quality of life at each step. The overall outcome depends on the following factors: (i) Patient factors: Age, co-morbidities, status at the initial presentation, site of aneurysm, size of the aneurysm, severity of SAH, hydrocephalus, intraventricular bleeding, initial or later vasospasm (ii) Treatment factors: Time to start the treatment from the onset, Neuro ICU care, volume of patients at the centre, intervention radiology facilities and other factors. The outcome of the disease is measured in the form of neurological and neuropsychological deficits, activity limitation ranging from ability to return to work, ability to perform ADL to vegetative state. The improved outcome depends on successful treatment followed by
early inpatient and outpatient rehabilitation efforts. The functional recovery is improved with early and aggressive rehabilitation. Data will be obtained through questionnaires and assessment done as observational prospective study.

37. Rodent model of blast induced neurotrauma: A functional and histopathological study. Dr: Puru Bansal. Guides: Dr. S Sampath, Dr. Dhananjaya I Bhat

People suffering from Blast Induced Neurotrauma (BINT) have long term significant cognitive, memory and behavioral disturbance, the pathophysiology of which has not yet been understood completely. The present study attempts to develop a suitable rodent model for BINT studies. Towards this, SD rats will be exposed to varying peak pressures of BINT using an indigenous blast tube (modified Reddy's Tube). The cognitive and sensorimotor deficits following injury will be studied using Barnes Maze and Grid Walking tests and these will be correlated with histopathological findings. The usefulness of this experimental model for studies on neurotrauma will be evaluated.

38. Can cortical plasticity explain the cause of trigeminal neuralgia-A resting fMRI based study. Dr. Mustafa Iqbalahmed Chandshah. Guides: Dr. B Indira Devi, Dr. Jitender Saini, Dr. Dhananjay I Bhat

Trigeminal neuralgia can be classified as classic/idiopathic and symptomatic secondary TGN. The most frequent cause of TGN is mechanical irritation of the nerve in the vulnerable zone of 4 to 5mm extending from point of transition, from peripheral to central myelin to the most proximal aspect where the nerve enters the pons often the cause being arterial contact with nerve. The diagnosis of this condition is purely clinical. However, imaging (MRJ) is required to rule out secondary causes and vascular compression if any. The primary aim of this study is to evaluate the role of resting fMRI to analyze changes in brain activity in cases of Trigeminal neuralgia. The secondary aim is to know whether cortical changes are causing pain or cause of pain. This is a prospective study including patients who are undergoing treatment in NIMHANS.

39. Clinical correlation with angioarchitecture in brain arteriovenous malformations. Dr. Siroya Hardik Lalith. Guides: Dr. Malla Bhaskara Rao, Dr. Aravind

Brain AVMs commonly occur in young adults with morbidity and death occurring in 30-50% and 10-15% respectively. Hemorrhage from brain AVMs represent 2% of all hemorrhagic strokes with overall risk of intracranial hemorrhage of 2-4% per year. Angiographic assessment is recommended to define prognosis. Depending on AVM's angioarchitecture its annual hemorrhagic risk may vary significantly. The objectives of the study are to collect, document, analyse, infer correlation of clinical presentation with angioarchitecture in brain AVMs and predict natural history of disease.

40. Staged silicon tube microanastomosis and microvascular anastomosis training program for a novice in neurosurgery. Dr. Dhaval Gohil. Guides: Dr. Sampath S, Dr. Nupur Pruthi, Dr. Anita Mahadevan

Microvascular anastomosis is a difficult art. The technique of microvascular anastomosis can be learnt and perfected only by practice using vessels of small animals in the laboratory. Thus, training novices to perform efficient and reliable microvascular anastomosis is of vital importance. Plastic, reconstructive and transplantation surgical specialties are actively adapting experimental training programs for acquisition of microsurgical skills in transplantation, reconstruction of salvageable tissues, and flap transfer surgeries. But neurosurgical literature lacks a proper curriculum for training to learn and perfect this difficult art. The objectives of the study are: (i) to practice various anastomosis techniques using rat femoral vessels where goals are staged according to difficulty level (ii) to study the clinical (immediate and delayed) patency rates and (iii) to study histological changes at anastomosis site and patency rates in animal model. The primary goal is to establish comprehensive standardized training program for novice to micro vascular surgery in neurosurgical field where this study can be useful as baseline.

41. Preoperative and postoperative fluid and electrolyte imbalance in preoperative and post-operative sellar and suprasellar lesion- a prospective study. Dr. Nitish Nayak. Guide: Dr. KVL Narasinga Rao

Lesions are mainly pituitary tumor, craniopharyngioma and meningioma. Anatomical location of sellar and suprasellar lesion are usually presented with visual disturbance, hormonal disturbances and fluid and electrolyte imbalance. Conditions such as central diabetes insipidus (CDI), syndrome of inappropriate anti diuretic hormone secretion (SIADH), cerebral salt wasting (CSW) and hyponatremia make clinical management extremely challenging in postoperative period. Fluid and electrolyte imbalance is the most common postoperative complication and diabetes insipidus the most frequent disturbance. Early diagnosis and treatment are important to prevent the potential adverse effects of these disorders on the central nervous system (CNS). Various factors associated with increase in the risk of postoperative diabetes insipidus include young age, male sex, large intrasellar mass, cerebrospinal fluid leak and resection of certain types of lesions, including craniopharyngiomas, Rathke-clef cysts and adrenocorticotrophic-hormone-secreting pituitary adenomas. The course of postoperative diabetes insipidus can be transient or permanent. In most cases, the disease is transient; only 2–10% of patients manifest prolonged polyuria (3,4). Diabetes insipidus is permanent only if more than 80–90% of the arginine vasopressin (AVP)-secreting neurons in the supraoptic and paraventricular hypothalamic nuclei degenerate bilaterally. Anterior and posterior pituitary dysfunction is probably due to manipulation or vascular alterations of the neurohypophysis. There have been very few prospective studies on water and electrolyte imbalance in sellar and suprasellar lesions.
42. Co-relation of neuro-anatomic substrates which determine neurocognitive outcome using resting state fMRI in cases of midline posterior fossa tumors in children. Dr. Ankit Amar Gupta. Guides: Dr. Indira B Devi, Dr. Nishanth Sadashiva

Cerebellar mutism (CM) complicates up to a third of posterior fossa tumor surgeries in the paediatric population. The reduced or absent speech occurs in the first post-operative week and the symptoms have a limited duration with spontaneous recovery in most cases with residual cognitive, behavioral or emotional derangements manifested most often as dysarthria in up to a third of cases or some phonological impairment in the rest. Hypothesized causes include tumor infiltration of the brain stem, medulloblastoma histopathology and occurrence in the paediatric population – which is where these tumors most often manifest. Posterior Fossa Syndrome (PFS) is cerebellar mutism in association with cranial nerve deficits, cognitive and behavioral changes or urine incontinence. The pathology by most authors is localized to the dentatothalamic cortical tract which forms an important source of cerebellar input to the cerebral- the surgical manipulation resulting in diaschisis. However, there is a dearth of scientific literature describing the temporal sequence of changes on resting state fMRI following CM and its management, and comparing post-operative changes in the cognition, behavior and emotion.

43. Functional outcome and histopathological study comparison of peripheral nerve repair with suture material and hydrogel. Dr. Vinod Kumar B. Guides: Dr. Dhananjaya I Bhat, Dr. Anita Mahadeva

Speech Pathology & Audiology

1. A prospective, randomized, double blind, sham-controlled study of the effect of transcranial direct current stimulation (tDCS) on language function in early post stroke patients. Investigators: Dr. P Vandana, Dr. Anupam Gupta, Prof. C Andrade, Dr. Girish B Kulkarni

The aim of the study is to assess the speech and language dysfunctions in patients with arterial stroke (both ischemic and haemorrhagic) with 6 weeks of onset of stroke. Aphasia management will be based on the deficits. So far 11 patients have been assessed and the investigators aim to recruit 60 patients for the study.

2. Effect of deep brain stimulation on speech of patients with Parkinson's disease. Investigators: Dr. Vandana VP, Dr. M Jayaram, Dr. Pramod K Pal, Dr. Dwarakanath S, Dr. Ravi Yadav, Dr. Nitish Kamble

Deep brain stimulation (DBS) has been reported to be successful in relieving the core motor symptoms of Parkinson's disease (PD) and motor fluctuations in the more advanced stages of the disease. However, data on the effects of DBS on speech performance are inconsistent. The aim of the present study is to analyze the pre- and post- DBS speech characteristics of patients with PD using acoustic and perceptual tasks. Results revealed that deep brain stimulation did not significantly change the surgical participants’ perceptual speech dimensions or oromotor function despite significant postoperative improvements in ratings of general motor function and disease severity.

3. Audiological manifestations in mitochondrial disorders. Investigators: Dr. Vandana VP, Dr. Bindu PS, Dr. AB Taly, Dr. Nagappa M

In the past few years, knowledge of the genetic cause of deafness has increased considerably. Among the genetic factors, mtDNA (mitochondrial DNA) mutations are clearly responsible for several forms of syndromic and non-syndromic hearing loss, although the role of these mutations in hearing loss is still poorly understood. The aim of the present study is to investigate the clinical and auditory manifestations in patients with confirmed mitochondrial DNA defects using a comprehensive audiological test battery. Data collection is ongoing.

4. A comparison of the speech and hearing characteristics of persons with Parkinson's disease and its variants. Investigators: Dr. M Jayaram, Dr. Phalguni Anand Alladi, Dr. Y Pradeep

Transfusion Medicine & Haematology

1. Supply of voluntary donor derived single donor platelet (apheresis) at affordable cost, round the clock for patients in the state of Karnataka and neighbouring regions– a research proposal as a self-sustaining model. Investigators: Dr. Sundar Periyavan, Dr. V Bhadrinarayan (Funding by Govt. of Karnataka)
2. An investigation on the frequency of Sero-positive status to JC virus among age-stratified healthy and HIV-1 infected individuals domiciled in South India. Investigators: Dr. Hubert Darius Daniel, Consultant, Dr. Asha Mary Abraham, Professor and Head of Clinical Virology, Dr. Rajesh Kannangai, Professor, (from Christian Medical College, Vellore, Tamil Nadu). Dr. N Balaji, Director, Dr. R Magesh Babu, Reader and Head, (from Sri. Sakthi Amma Institute of Biomedical Research, SNHRC). Dr. Sundan Periyavan, Dr. Anita Mahadevan and team

Students:

3. Study of blood pressure changes during Therapeutic Plasma Exchange (TPE) in patients of GBS with known hypertension. Dr. Suverna Koliker. Guide: Dr. Sundar Periyavan

Ayurveda


2. Clinical evaluation of Brahma Rasayana in the management of Manasa Mandata (Mental Retardation) – An open clinical trial.

3. Ayurvedic coded drug (AYUSH MANAS) in the management of Manasa Mandata (Mental Retardation).

4. Efficacy of Manasamitra Vadakam on Generalized Anxiety Disorder: A polysomnographic assessment on sleep architecture and EEG power spectra.

5. Efficacy of Ayurvedic treatment for motor weakness due to ischemic stroke – A prospective randomized controlled study.


7. Clinical evaluation of Kalyanaka Ghrita in the management of Smritidaurubhya (cognitive deficit)


9. Ayurveda Mobile Health Care Programme (SCSP Project)

10. Implementation of Pharmaco Vigilance Programme.


12. Rasayana in the management of Manasa Mandata (Mental Retardation) – An open clinical Trail.


14. The therapeutic option on the neuro muscular diseases (Mamsa Vata) with a strategy of Ayurvedic formulation.

**RESEARCH PROJECTS**

(Chemical Year 2016-17)

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Mental Health is vital for the growth and productivity of every society and for a healthy and happy life. Mental Health means not only absence of Mental Illness but also having positive sense of wellbeing. Mental health is recognized as a critical requirement for the human development agenda and has been included as a specific indicator in the United Nations Sustainable Development Goals.

The growth and development of mental health services in India has not been uniform. Nevertheless, mental health initiatives are growing, both in quantity and quality. India launched its mental health policy in 2014 and the Mental Health care Act has also been passed in 2017. To further strengthen the policy initiatives and contribute to the development of action plans and data guided programs, the Ministry of Health and Family Welfare (MOHFW) identified the National Mental Health Survey (NMHS) as a priority area and commissioned National Institute of Mental Health and Neuro Sciences (NIMHANS), Bengaluru to undertake a nationally representative study.

The NMHS is one of the large mental health surveys undertaken globally covered a nationally representative population of the country and examined priority mental disorders, estimated treatment gap, assessed service utilization, disability and socio-economic impact along with assessing resources and systems. The NMHS was undertaken in 12 states across 6 regions of India [North (Punjab and Uttar Pradesh); South (Tamil Nadu and Kerala); East (Jharkhand and West Bengal); West (Rajasthan and Gujarat); Central (Madhya Pradesh and Chhattisgarh) and North-east (Assam and Manipur)]. In each state, the dedicated team of Investigators included mental health and public health professionals.

A uniform and standardised methodology was adopted: multi-stage, stratified, random cluster sampling technique, with random selection based on Probability Proportionate to Size; all individuals 18 years and above in the selected households were interviewed. A sub-sample was included in four states to examine feasibility of methodology for understanding mental morbidity amongst adolescents (13 – 17 years). Information was captured on handheld devices. NMHS 2015-16 interviewed 39,532 individuals across 720 clusters from 80 talukas in 43 districts of the 12 selected states.

Using secondary data sources and adopting a consensus methodology, a detailed assessment for the state mental health systems was undertaken. The National Mental Health Survey carried out in 12 states representing different regions in the country covered nearly 60% of the country’s population and represented the diverse administrative and economic characteristics.

In addition, the NMHS completed the unique task of assessing the systems for mental health care in the individual states where the survey was undertaken. Using secondary data sources and adopting a consensus methodology, a detailed assessment for the state mental health systems was undertaken.

The summary report of the NMHS was released in New Delhi by Smt. Anupriya Patel and Shri. Faggan Singh Kulaste, Hon’ble Minister’s for State on 10 October 2016 as part of World Mental Health Day 2016 celebrations.

**KEY RESULTS OF NMHS**

The overall weighted prevalence for any mental morbidity for those 18 and above years in India is 13.7% lifetime and 10.6% current. The age group between 40 to 49 years were predominantly affected and there were gender differences across different disorders. Across the different disorders, residents from urban metro had a greater prevalence. Persons from lower quintiles were observed to have a greater prevalence of one or more mental disorders. **Treatment gap for mental disorders ranged between 70 to 92% for different disorders.** At least half of those with a mental disorder reported disability in all three domains of work, social and family life. Greater disability was reported among persons with epilepsy, depression and BPAD. The median amount spent for care and treatment varied between disorders and ranged from 1000 to 2500.

**KEY RESULTS of SMHSA**

The systematic documentation of the available information in the SMHSA provided information of the current status and progress made in each of the states. The results indicate that among the 12
states examined, Mental Health Programmes have a low priority on the public health agenda and were quite diverse in several of the parameters studied (population covered by the DMHP, Specialist mental health and rehabilitative services, availability of core mental health professionals and supportive staff, action plan, total budget available and utilised for mental health, IEC materials including use of social media, logistics and inventory control regarding drugs, collaboration with health and health-related sectors, key social welfare measure being implemented, Health Management Information Systems and monitoring and evaluation.

A comparison between one or more parameters across the states is not entirely justified due the individual path of growth and development of each of the states.

**Recommendations**

An estimated 150 million persons are in need of mental health interventions and care (both short term and long term). This huge burden calls for immediate attention of political leaders, policy makers, health professionals, opinion-makers and society at large. Mental health should be given higher priority in the developmental agenda of India.

The organisation and delivery of comprehensive and integrated mental health services in India is indeed a challenging task for policy makers. In recent times, the Mental Health Policy, the new Mental Health Bill, judicial directives, National Human Rights Commission initiatives and advocacy actions aim at improving the scenario and undeniably are the right steps in this direction.

No single solution gives complete and / or quick results. Several components and activities need to be integrated into the larger existing systems, new actions need to be promoted and implementation stringently followed. Building strong health systems that integrate mental health with the larger public health system based on evidence backed practices is the need of the hour. Data driven policies and programmes play a key role in this process.

The data from the NMHS, it is hoped will inform mental health policy and legislation, help shape mental health care delivery systems in the country. Most significantly, mental health should be given higher priority in the developmental agenda of India. All policies and programmes in health and all related sectors of welfare, education, employment and other programmes need to include and integrate mental health agenda in their policies, plans and programmes. Details of the recommendations are available in the report at http://nimhans.ac.in/national-mental-health-survey-2015-16.

A National Commission on Mental Health comprising of professionals from mental health, public health, social sciences, the judiciary and related backgrounds should be constituted to oversee, support, facilitate, monitor and review mental health policies – plans – programmes in a continuous manner.

The two comprehensive and detailed reports of NMHS entitled “Prevalence, Pattern and Outcomes” and “Mental Health Systems” were released during the 21st Convocation of NIMHANS in Bengaluru on 27 December 2016. Shri. Jagat Prakash Nadda, Hon’ble Minister for Health and Family Welfare, Government of India released the reports in the august presence of Shri. HN Ananth Kumar, Hon’ble Minister for Chemicals and Fertilizers, Government of India, Dr. Sharanprakash R Patil, Hon’ble Minister for Medical Education, Government of Karnataka & Vice-President, NIMHANS, Shri. PC Mohan, Hon’ble Member of Parliament, Dr. AS Kiran Kumar, Chairman, Indian Space Research Organisation (ISRO), and Shri. CK Mishra, Secretary, Ministry of Health & Family Welfare, Government of India.
## ICD-10 DCR Prevalence (%) of Mental morbidity among adults 18+ years

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<th>ICD-10 Code</th>
<th>Description</th>
<th>Lifetime (%)</th>
<th>Current (%)</th>
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<tr>
<td>F10-F19</td>
<td>Mental and behavioral problems due to psychoactive substance use</td>
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<td>F10</td>
<td>Alcohol use disorder</td>
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<td>F11-19</td>
<td>Except 17 Other substance use disorder</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>F17</td>
<td>Tobacco use disorders</td>
<td>20.9</td>
<td></td>
</tr>
<tr>
<td>F20-F29</td>
<td>Schizophrenia, other psychotic disorders</td>
<td>1.4</td>
<td>0.4</td>
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<tr>
<td>F30-F39</td>
<td>Mood (Affective) disorders</td>
<td>5.6</td>
<td>2.8</td>
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<tr>
<td>F30-31</td>
<td>Bipolar Affective Disorders*</td>
<td>0.5</td>
<td>0.3</td>
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<tr>
<td>F32-33</td>
<td>Depressive Disorder</td>
<td>5.3</td>
<td>2.7</td>
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<td>F40-F48</td>
<td>Neurotic &amp; stress related disorders</td>
<td>3.7</td>
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<td>F40</td>
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<td>Other anxiety disorders***</td>
<td>1.3</td>
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<td>F42</td>
<td>Obsessive Compulsive Disorder</td>
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<td>F43.1</td>
<td>PTSD</td>
<td>0.2</td>
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*Includes Single mania and hypomania episodes; ** Includes Agoraphobia and Social phobia; *** Includes Panic disorder and Generalised anxiety Disorder
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<table>
<thead>
<tr>
<th>No.</th>
<th>Author(s)</th>
<th>Title</th>
<th>Journal/Details</th>
</tr>
</thead>
</table>


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(ii) Gender disadvantage, psychological distress and resilience in adolescent Indian girls. 3rd International Conference by the Department of Applied Psychology of Pondicherry University, Pondicherry, 13-15 October 2016 (Best Paper Award)  
(iii) Two sides of a coin: distress and hope in assisted reproductive treatments. World Association of Social Psychiatry, Delhi, 30 November-4 December 2016  
(iv) Nurse led mental health intervention for women with HIV and Depression: Feasibility of a novel approach used in the MAHILA Trial. 7th World Congress of Women's Mental Health, Dublin, Ireland, 6-9 March 2017  
(v) The IMPRESS trial: development of a multicomponent behavior change intervention to reduce home exposure to second hand smoke in pregnant Indian women. Research Collaborative Meeting of University of Liverpool, UK and NIMHANS, India, 13 March 2017  
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63. Manjula, B, Janardhana N, Nirmala BP. Mental health promotion activities for healthy romantic relationship among adolescents. 3rd International Conference by the Department of Applied Psychology, 6th International Conference on Successful Mental health and Well-being, ECR, Pondicherry University, Puducherry 13-15 October 2016.


67. Meeka Khanna. (i) Pulmonary involvement in patients with Guillain-Barré syndrome in sub acute phase. Joint Conference of


70. Meenakshi Banerjee, Uma H. Narrative counselling in school setting: an exploratory study. 43rd National Annual Conference of Indian Association of Clinical Psychologist, Coimbatore, 28 September 2017 (Best Poster Award).

71. Muralidhar D (i) Understanding the experiences of women with domestic and intimate partner violence and psychiatric social work intervention. One Day Symposium on Addressing the Mental Health Issues of Women with Domestic Violence and Intimate Partner Violence. NIMHANS, Bengaluru, 10 November 2016 (ii) Presidential Addresses in the 35th Annual National Conference, ISPSW, Chandigarh, 9-11 February 2017 (iii) Sociocultural background of persons seeking mental health services to the NIMHANS to the International Volunteers of Mental Health brought by SLV Global UK, Srilanka, 26 June, 9 August, 5 September, 4 October 2016.


73. Muralidhar D, Dhanasekara Pandian, Sinu E. Recent trends in psychiatric social work research in the field of addiction medicine. 4th National Conference of World Association for Psychosocial Rehabilitation-Indian Chapter, Madurai, Tamil Nadu, 19 November 2016.


84. Nirmala BP. Challenges experienced by the professionals in providing livelihood opportunities for persons with mental illness. 4th National Conference World Association for Psychosocial Rehabilitation Indian Chapter, MS Chellamuthu Trust & Research Foundation, Madurai, 19 November 2016.


99.


100.


101.


102.

Ramachandra (i) (a) Human relations (b) Ethical issues in nursing research, for Ph.D. scholars of National Consortium for Ph.D. St. John Academy of Health Sciences, Bengaluru, 19-20 September 2016.

103.


104.

Reddy PR. (i) Forensic neuropsychology; an overview. Joint Conference of Indian Federation of Neurorehabilitation &


114. Sanjeev Jain, Mathew Varghese. (i) Expert Committee for ADBS component. DBT project meeting Delhi, 25 July 2016 (ii) Fogarty Grant Review Meeting and interacted with Faculty from the University of Florida Gainesville, New Delhi, 19-20 January 2017.


Neurosciences


6. Alphy Sabu, Srividya GB, Anjana Thomas, Pradeep Yuvaraj, Jayaram M. Cochlear microphonics in diagnosing ANSD in absent OAEs. Annual Conference of Indian Speech and Hearing Association (Bengaluru Chapter- ISHA BC), 24-25 September 2016 (Best Paper Award).


16. Bhat MD, Prasad C. Poster imaging findings in two pathologically proven cases of leukoencephalopathy with cerebral cysts and calcification. 70th Indian Radiological and Imaging Association, Jaipur, 5-8 January 2017.


22. Chakraborti D, Deepti BS, Kamath S. Description of a novel literature search methodology and its validation against pubmed.18th Annual Conference of Indian Society of


26. Chandra SR. Neurology CME. Department of Neuromedicine, Government Rajaji Hospital Madurai Clinical case discussion. DM post graduate Dr. Ram 20 May 2016.

27. Chandrasekhar Sagar BK. (i) (a) Advances in Microscopy. 12th Refresher Course in Life Sciences, UGC, University of Mysore, Mysore, 11 November 2016 (b) Applications of TEM in Medical and Biological Sciences. 12th Refresher Course in Life Sciences, UGC, University of Mysore, Mysore, 11 November 2016.


35. Dhananjaya Bhat (i) Blast injury to the brain an animal model. 25 March 2017 (ii) DST meeting at Bhubaneswar and presented progress report of the project titled Cortical Reorganization Following Brachial Plexus Injury A FMRI Study, December 2016.


myasthenic syndrome with spinocerebellar ataxia Type 1 in a single family.


83. Patwardhan K, Bindu PS, Nagappa M, Ray A, Mathuranaath PS, Sinha S, Girimaji SC, Taly AB. Early onset dopa responsive dystonia due to tyrosine hydroxylase (th) deficiency–A 14 years
follow up study. 2nd Annual Conference of the Movement Disorders Society of India: MDSICON 2107, NIMHANS, Bengaluru, 6-8 January 2017.


88. Pradeep BS. Youth mental health promotion—yuva spandana. 28th Annual Conference of Karnataka Association of Community Health, KACHCON-2016, Sri Siddhartha Medical College, Tumkur, 9 December 2016.


104. Ravi Yadav. Tic Disorders, Mysore Neuro Club meeting, Mysore.


112. Sanjib Sinha (i) Epilepsy in special populations: Children, women and elderly. Samandeep Vidyapeeth, Vadodara, Gujarat, 9-10 July 2016 (ii) Advances in comprehensive management of


118. Shankar SK. 18th National Conference of Association for Prevention and Control of Rabies in India, NIMHANS, Bengaluru, 9-10 July 2016 (Dr. SN Madhususudana Oration).


121. Shreedhara AS, Madhu N, Bindu PS, Mathuramath PS, Sinha S, Taly AB. Serial EEG changes in NMDA positive autoimmune


RESOURCE PERSONS

Basic Sciences


3. Thennarasu K. (i) Biostatistical issues in mental health research, Cuttack, Odisha, organized by Indian Medical Association, Odisha, 1 April 2016 (ii) National Workshop on Research Methodology. NIMHANS, Bengaluru, 15-17 December 2016.

Behavioural Sciences


5. Bino Thomas (i) Dynamics of Marriage, Pre marriage Course, Youth, St. Thomas Forane Church, Dharmaram, Bangalore (a) 8 April 2016 (b) 13 August 2016 (c) 9 September 2016 (d) 8 October 2016 (e) 13 November 2016 (f) 9 December 2016 (g) 13 January 2017 (h) 12 February 2017 (i) 12 March 2017.


9. John Vijay Sagar (i) Workshop for Pediatricians Mental Health Problems in Adolescents Kochi, Kerala, 28 August


14. Murugappan NP. (i) Treatment design Workshop for the PRIDE project supported by the London School of hygiene & tropical medicine, the Public Health Foundation of India (Delhi, India) and Sangath (Goa, India), NIMHANS, Bengaluru, 26 May 2016 (ii) Child psychiatric disorders. MSW students placed in Department of Mental Health Education, NIMHANS, 30 January 2017 (iii) Functional approaches to management: Managing problem behaviours, Parenting issues in the context of children with ADHD, ASD and IDD, Case discussion and group work on ASD. Functional approaches to management of ADHD, Autism spectrum disorder and intellectual disabilities in children, NIMHANS, Bengaluru, 3-4 March 2017.

15. Naveen Kumar C. 12th Mid-Term CME of IPS, Assam, 08, 19 February 2017.

17. Phalguni Anand Alladi. Hands on training Workshop on Neurostereology and Assessment of Pain in Animals and Humans, AIIMS, Delhi, 18 October 2016.

18. Prabha S. Chandra. (i) To discuss and plan the implementation of Service for Pregnant Women in India, Fernandez Hospital, Hyderabad, 21 February 2017.


27. Sivakumar PT. (i) Seminar on Dementia by Innerwheel club, Koramangala, 23 April 2016 (ii) National Conference on


### Neurosciences

1. Anita Mahadevan. (i) Pre-Conference Workshop/CME on Lab Diagnosis of Rabies. 18th National Conference of Association for Prevention and Control of Rabies in India APCRICON 2016, NIMHANS, 8 July 2016 (ii) Paralytic rabies versus guillain barre syndrome–clinical, pathologic and immunologic findings. 18th National Conference of Association for Prevention and Control of Rabies in India, NIMHANS, 9-10 July 2016 (iii) Histologic anatomy and surgical pathology of temporal lobe epilepsy. Workshop on Temporal Lobe Epilepsy, Epilepsy Cadaveric Workshop, M.S. Ramaiah Advanced Learning Centre, 16-17 April 2016.


### Media/ Phone-in Programmes

#### Basic Sciences


#### Behavioural Sciences

1. Aarti Jagannathan (i) Yoga for mental wellbeing. Live video chat, Social media (Facebook) (a) 22 June 2016 (b) 23 June 2017 (ii) Awareness talk on Mental health– Health of the Mind (in Hindi), YouTube, produced by White Swan Foundation.


10. Seema Mehrotra, Jyotsna Agrawal. Taking care of mental health and other monthly updates. Youth Spring website (monthly updates throughout the year).


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**Neurosciences**


4. Shivashankar N. (i) (a) Sannegalu (b) Maatina Belavanige (c) Shravana Vartane (d) Makkalina Bhaasha Belavanigeyalli Poshakara Paatra. Radio Doctor, All India Radio, Prasar Bharati (Bengaluru), 21 November 2016.


**Child & Adolescent Psychiatry**

Dr. K John Vijay Sagar, Additional Professor, Life skills and adolescent mental health, Seminar on Life Skills, Bengaluru, 31 January 2017. Target group: Parents, teachers, counsellors, students.

**Clinical Psychology**

Dr. Uma Hirisave, Professor, Parenting children and adolescents, Inner Wheel Club, Bengaluru, 21 July 2016. Target group: Parents.


Dr. Keshav Kumar, Additional Professor, Tai Chi in Parkinson's disease, Parkinson's Awareness Week, NIMHANS, Bengaluru, 11 April 2016. Target group: General public.


Dr. Nitin Anand, Assistant Professor, Society and mental illness, 16 July 2016. Target group: General public.

Dr. Gitanjali Narayanan, Assistant Professor, Harmful consequences of substance use among youth, Al-Ameen College of Management Studies, Bengaluru, 15 July 2016. Target group: College students.

**Epidemiology**

Dr. Pradeep BS, Additional Professor, Epidemiological and statistical problems, PG Refresher Course, KIMS, Bengaluru, 23 October 2016. Target group: PGs in Community Medicine.
Dr. Pradnya Dhargave, Chief Physiotherapist, Women's health and happiness, International Women's Day, Bangalore Metro Rail Corporation (BMRCL), Bengaluru, 8 March 2017. Target group: BMRCL women employees.

Dr. Girish B Kulakarni, Additional Professor, Common Neurological Problems, Monthly Health topic, Jayanagar Study Circle, Bengaluru, 27 February 2016. Target group: General Public.

Dr. Ravi Yadav, Additional Professor, Dr. Pramod Kumar Pal, Professor and Head, Dr. Dwarkanath Srinivas, Professor of Neurosurgery, Parkinson's Disease, Parkinson's Day Programme, NIMHANS, 11 April 2016. Target group: Patients and caregivers.

Dr. Ravikumar R, Quality control practices in bacteriology, SMART Lab CME programme, MIOT International Department of Laboratory Medicine, Chennai, 12 November 2016. Target group: Laboratory technologists.


Dr. Bindu M Kutty, Professor and Head, (i) Meditation, plasticity, cognitive reserve and pursuit of excellence, Corporate Conclave on Personal Mastery for Leadership Excellence, Heartfulness Institute, Bengaluru, 17 August 2016. Target group: Bank and corporate sector employees.

Dr. Bindu M Kutty, Professor and Head, Dr. Ravindra, PhD Scholar, Dr. Ajay Kumar, Research Associate, Dr. Jyothi, PhD Scholar, Living Different: The art of healthy living, Public Outreach Programme, Defense Colony Co-Operative Housing Society Ltd., Bengaluru, 8 May 2016. Target group: General public.

Dr. BS Shankaranarayana Rao, Professor, (i) The ever-changing brain and new challenges in treating brain disorders, Public Lecture Series, (a) Kasturba Medical College, Mangaluru, 12 August 2016 (b) RGCB, Trivandrum, 7 February 2017. Target group: Faculty, postgraduates and research scholars (ii) Learning and memory: Moulding your brain!, BMS College for Women, Bengaluru, 22 September 2016. Target group: Faculty, students and research scholars (iii) Brain plasticity: A tool to treat neurological and psychiatric disorders, Popular Lecture, National Brain Research Centre (NBRC), Manesar, Haryana, 21 March 2017. Target group: Faculty, scientists, research scholars and students.

Dr. Sabita K Rajesh, Scientist, Dr. UD Kumaresan, PhD Scholar, Mr. Sunil Kumar Khokhar, Sr. Research Fellow, Introduction to neuroscience, nutrition in cognition, stress and brain development, Outreach Programme on Stress and Nutrition in Brain Development, Sharda Rajkeyee Utch Maadhyam Vidhyalaya, Rajasthan, 30-31 January 2017. Target group: Faculty members and students.

Dr. Reeta Mani, Associate Professor, Rabies, Awareness on Rabies, Valley School, Bengaluru, 19 December 2016. Target group: Schoolchildren.

The Department of Nursing organized six lectures (i) Parents must take care of themselves in order to be effective parents, (ii) Healthy ageing: Save your heart, save your brain (iii) Handling stress (iv) First-Aid in mental health: Self-care as an empowering tool for depression (v) My family, my responsibilities: Public lecture for teenagers (vi) Stress management, during 2016-2017 for general public.

Dr. BV Kathyayani, Professor and Principal, (i) Nurses: A force for change improving health system's resilience, Nurses Day, NIMHANS, Bengaluru, 12 May 2016 (ii) Women Empowerment, International Women's Day, Dr. MV Shetty College of Medical Lab Technology, Mangaluru, 8 March 2017. Target group: Teachers.

Mrs. Poornima HN, Lecturer, Dr. S Valliammal, Lecturer, Mrs. G Jothimani, Clinical Instructor, Mrs. A Shamala, Clinical Instructor, Mr. Kannan K, Clinical Instructor, Mrs. N Padmavathi, Clinical Instructor (i) Close the immunization gap, World Immunization Day, Vanivilas Hospital, Bengaluru, 10 November 2016. Target group: General public (ii) Quantum of quality: Newborn care, Newborn Week Celebration, Indira Gandhi Hospital, Bengaluru, 16 November 2016. Target group: General public.

Dr. Prabha S Chandra, Professor and Head, Literature and mental health, National Gallery of Modern Art (NGMA), Bengaluru, 22 October 2016. Target group: General public.

Dr. Bino Thomas, Assistant Professor of Psychiatric Social Work, (i) My family, my responsibilities, Mental Health for Everyday Life, Public Lecture Series, NCWB, Bengaluru, 26 November 2016. Target group: General public (ii) Dynamics of marriage, Marriage Education programme, NCWB, Bengaluru, 3 September 2016. Target group: Youth


Dr. BP Nirmala, Additional Professor, Issues related to the management of people suffering from chronic & severe mental illness, Richmond Fellowship, 9 March 2017. Target group: Staff members.

Dr. R Dhanasekara Pandian, Additional Professor, (i) Legal Advocacy, International Federation of Social Workers (IFSW), Christ University, Bengaluru, 18-19 August 2016. Target group: Social work professionals and practitioners (ii) Supporting families who have persons with addiction problems, Refresher Training Programme-Family Counselling Centres, NIMHANS, Bengaluru, 9 June 2016. Target group: Family counsellors.

Dr. Seema Mehrotra, Professor of Clinical Psychology, First aid in mental health: Self-care as an empowering tool for depression, Mental Health for Everyday Life, Public Lecture Series, NCWB, Bengaluru, 22 October 2016. Target group: General public.

Dr. Manoj Kumar Sharma, Additional Professor of Clinical Psychology, Handling stress, Mental Health for Everyday Life, Public Lecture Series, NCWB, Bengaluru, 17 September 2016. Target group: General public.

Dr. Priya Tresas Thomas, Assistant Professor, (i) Psycho social aspects of Parkinson's Disease, Parkinson's Day Programme, NIMHANS, Bengaluru, 10 April 2016. Target group: Parkinson's disease patients, caregivers and members of PD Society of Bengaluru Chapter (ii) Public Forum for Patients with Epilepsy, Indian Epilepsy Association and NIMHANS, Bengaluru, 25 February 2017. Target group: Epilepsy patients and caregivers.


Dr. Anish V Cherian, Assistant Professor, Psycho-social care for obsessive compulsive disorder, workshop, St. Aloysius College, Mangaluru, 6 March 2017. Target group: Students

Speech Pathology & Audiology

Dr. M Jayaram, Sr. Professor and Head, Dr. N Shivashankar, Professor, Dr. Vandana VP, Associate Professor, Dr. BK Yamini, Associate Professor, Dr. Aravind Kumar, Speech Therapist, Dr. Pradeep Yuvaraj, Speech Therapist, Dr. SS Meera, Speech Therapist, (a) Protect your ears (b) Types of play (c) Early Intervention for Speech and Language Disorders (d) Technology in speech and Language (e) Disorders of Hearing (f) Aphasia-Communication strategies (g) Voice disorders in elderly (h) Want to delay dementia- speak more languages, National Science Day, NIMHANS, Bengaluru, 28 February 2017. Target group: General public.

Transfusion Medicine & Haematology

The department organised 32 motivational lectures/talks (by social workers and counsellors) on blood donation at various colleges and IT companies in Bengaluru during the year under review.
INSTITUTE BODY

1 Shri. Jagat Prakash Nadda  
Hon’ble Union Minister for Health and Family Welfare  
Government of India  
Nirman Bhavan, New Delhi – 110 011  

President  

11 Chief Secretary  
Government of Karnataka  
Bengaluru – 560 001  

12 Prof. K. Vijay Raghavan  
Secretary, Department of Biotechnology  
Government of India  
New Delhi – 110 003  

2 Dr. Sharanprakash R Patil  
Hon’ble Minister of State for Medical Education  
Government of Karnataka  
Bengaluru – 560 001  

Vice-President  

13 Dr. VS Chauhan  
Director, International Centre of Genetic Engineering and Biotechnology  
New Delhi – 110 067  

3 Shri. Mallikarjun Kharge  
Member of Parliament, Lok Sabha  

Member  

14 Dr. Vikram Patel  
Professor of International Mental Health  
London School of Hygiene and Tropical Medicine, Sangath Centre, Porvorim  
Goa – 403 521  

4 Shri. PC Mohan  
Member of Parliament, Lok Sabha  

Member  

15 Dr. Ramesh Budhani  
Professor of Physics  
Indian Institute of Technology  
Kanpur – 208 016  

5 Dr. MV Rajeev Gowda  
Member of Parliament, Rajya Sabha  

Member  

16 Justice (Retd.) Prabha Sridevan  
No.7, Krishnaswamy Iyer Avenue  
Mylapore, Chennai– 600 004  

Member  

6 Secretary (Health)  
Ministry of Health and Family Welfare  
Government of India  
New Delhi – 110 011  

Member  

17 Shri. Amrit Kumar Bakshy  
President  
Schizophrenia Awareness Association  
Pune – 411 041  

7 Secretary to Government of India  
Department of Expenditure  
Ministry of Finance  
New Delhi – 110 001  

Member  

18 Dr. R Thara  
Director  
Schizophrenia Research Foundation (SCARF)  
Chennai – 600 101  

8 Secretary to Government of India  
Higher Education Department  
Ministry of Human Resource Development  
New Delhi – 110 001  

Member  

19 Dr. Shoba Srinath  
Sr. Professor of Child and Adolescent Psychiatry  
NIMHANS, Bengaluru – 560 029  

9 Dr. Jagadish Prasad  
Director General of Health Services  
Government of India  
New Delhi – 110 011  

Member  

10 Vice-Chancellor  
Rajiv Gandhi University of Health Sciences  
Bengaluru – 560 041  

Member
1 Shri. Jagat Prakash Nadda  
Hon’ble Union Minister for Health and Family Welfare, Government of India and President, NIMHANS  
Bengaluru – 560 029

2 Shri. PC Mohan  
Member of Parliament  
Government of India  
New Delhi – 110 011

3 Secretary  
Dept. of Health and Family Welfare  
Government of India  
New Delhi – 110 011

4 Dr. Jagadish Prasad  
Director General Health Services  
Government of India  
New Delhi – 110 011

5 Additional Secretary & Financial Adviser  
Ministry of Health and Family Welfare  
Government of India  
New Delhi – 110 001

6 Shri. Subhash Chandra Khuntia  
Chief Secretary  
Government of Karnataka  
Bengaluru – 560 001

7 Dr. M Jayaram  
Sr. Professor of Speech Pathology & Audiology  
Dean (Neurosciences)  
NIMHANS, Bengaluru – 560 029

8 Dr. R Thara  
Director  
Schizophrenia Research Foundation (SCARF)  
Chennai – 600 101

9 Prof. Vijay Raghavan  
Secretary, Department of Biotechnology  
Ministry of Science and Technology  
Government of India  
New Delhi – 110 003

10 Dr. Bhabatosh Biswas  
Vice-Chancellor  
The West Bengal University of Health Sciences  
Kolkata – 700 064

11 Prof. GN Narayana Reddy  
Former Director  
NIMHANS, Bengaluru – 560 029

12 Dr. TR Raju  
Sr. Professor of Neurophysiology  
NIMHANS, Bengaluru – 560 029

13 Dr. GS Umamaheswara Rao  
Sr. Professor of Neuroanaesthesia  
NIMHANS, Bengaluru – 560 029

14 Dr. Shoba Srinath  
Sr. Professor of Child & Adolescent Psychiatry  
NIMHANS, Bengaluru – 560 029

15 Dr. BN Gangadhar  
Director  
NIMHANS, Bengaluru – 560 029
STANDING FINANCE COMMITTEE

1. Secretary
   Ministry of Health & Family Welfare
   Government of India
   New Delhi – 110 001
   Chairman

2. Dr. Jagdish Prasad
   Director General of Health Services
   Government of India
   New Delhi – 110 011
   Member

3. Additional Secretary & Financial Adviser
   Ministry of Health & Family Welfare
   Government of India
   New Delhi – 110 001
   Member

4. Vice-Chancellor
   Rajiv Gandhi University of Health Sciences
   Bengaluru – 110 041
   Member

5. Dr. R Thara
   Director
   Schizophrenia Research Foundation (SCARF)
   Chennai – 600 101
   Member

6. Dr. Ramesh Budhani
   Professor of Physics
   Indian Institute of Technology
   Kanpur – 208016
   Member

7. Dr. V Ravi
   Prof. & Head, Dept. of Neurovirology
   Dean (Basic Sciences)
   NIMHANS, Bengaluru – 560 029
   Member

8. Dr. BN Gangadhar
   Director
   NIMHANS, Bengaluru – 560 029
   Member Secretary

ACADEMIC COMMITTEE

1. Prof. Vijay Raghavan
   Secretary, Department of Biotechnology
   Ministry of Science and Technology
   Government of India
   New Delhi – 110 003
   Chairman

2. Dr. VS Chauhan
   International Centre for Genetic Engineering and Biotechnology
   New Delhi – 110 067
   Member

3. Vice-Chancellor
   Rajiv Gandhi University of Health Sciences
   Bengaluru – 560 041
   Member

4. Prof. KVR Sastry
   Consultant Neurosurgeon
   3–4–502, Flat 2, Kamal, Barkatpura
   Hyderabad – 500 027
   Member

5. Dr. Padma Srivastava
   Professor of Neurology
   All India Institute of Medical Sciences
   New Delhi– 110 029
   Member

6. Prof. AV Srinivasan
   Institute of Neurology
   Madras Medical College
   Chennai– 600 003
   Member

7. Dr. Bhabatosh Biswas
   Vice-Chancellor
   The West Bengal University of Health Sciences
   Kolkata – 700 064
   Member

8. Prof. Smitha Deshpande
   Head, Dept. of Psychiatry
   Dr. Ram Manohar Lohia Hospital
   New Delhi– 110 001
   Member

9. Dr. GS Umamaheswara Rao
   Sr. Professor of Neuroanaesthesia
   NIMHANS, Bengaluru – 560 029
   Member

10. Dr. Shoba Srinath
    Sr. Professor of Child & Adolescent Psychiatry,
    NIMHANS, Bengaluru – 560 029
    Member

11. Dr. V Ravi
    Prof. & Head
    Dept. of Neurovirology
    Dean (Basic Sciences)
    NIMHANS, Bengaluru – 560 029
    Member

12. Dr. BN Gangadhar
    Director
    NIMHANS, Bengaluru – 560 029
    Member Secretary
# Planning and Monitoring Committee

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Position</th>
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<tbody>
<tr>
<td>1</td>
<td>Dr. MV Rajeev Gowda</td>
<td>Chairman</td>
<td>Member of Parliament (Rajya Sabha)</td>
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<td>2</td>
<td>Dr. SK Pandya</td>
<td>Member</td>
<td>Flat 11, 5th Floor, Shanti Kuteer</td>
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<td>215 Netaji Subhash Road, Mumbai – 400 020</td>
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<td>Prof. K Vijay Raghavan</td>
<td>Member</td>
<td>Secretary, Department of Biotechnology</td>
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<td>Government of India, New Delhi – 110 003</td>
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<td>4</td>
<td>Dr. Vikram Patel</td>
<td>Member</td>
<td>Adjunct Professor</td>
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<td>Delhi – 110 016</td>
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<td>5</td>
<td>Prof. Ravikumar TS</td>
<td>Member Secretary</td>
<td>231, B, Kilpauk Garden Road</td>
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<td>6</td>
<td>Prof. DN Rao</td>
<td>Member Secretary</td>
<td>Professor, Department of Biochemistry</td>
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<td>Dr. BN Gangadhar</td>
<td>Member Secretary</td>
<td>Director</td>
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<td>NIMHANS, Bengaluru – 560 029</td>
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# Standing Estate Committee

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<th>No.</th>
<th>Name</th>
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<tbody>
<tr>
<td>1</td>
<td>Shri. PC Mohan</td>
<td>Chairperson</td>
<td>Member of Parliament</td>
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<td>2</td>
<td>Dr. D Nagaraja</td>
<td>Member</td>
<td>Sr. Professor of Neurology &amp; Former Director</td>
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<td>Vice-Chancellor</td>
<td>Member</td>
<td>Rajiv Gandhi University of Health Sciences</td>
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<td>Dr. Bhabatosh Biswas</td>
<td>Member</td>
<td>Vice-Chancellor</td>
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<td>5</td>
<td>Dr. Shoba Srinath</td>
<td>Member Secretary</td>
<td>Sr. Professor of Child &amp; Adolescent Psychiatry</td>
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<td>6</td>
<td>Dr. M Jayaram</td>
<td>Member Secretary</td>
<td>Sr. Professor of Speech Pathology &amp; Audiology</td>
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<td>Dean (Neurosciences)</td>
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<td>7</td>
<td>Shri. NL Satish</td>
<td>Member Secretary</td>
<td>Assistant Executive Engineer</td>
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<td>8</td>
<td>Dr. BN Gangadhar</td>
<td>Member Secretary</td>
<td>Director</td>
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# Hospital Management Committee

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<tr>
<th>No.</th>
<th>Name</th>
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<td>Shri. Amrit Kumar Bakhshy</td>
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<td>Shri. Mallikarjun Kharge</td>
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<td>Dr. SK Chaturvedi</td>
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<td>Professor of Psychiatry and</td>
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<td>Dean (Behavioural Sciences)</td>
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<td>Dr. R Thara</td>
<td>Member</td>
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<td>Dr. Umamaheswara Rao</td>
<td>Member</td>
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<td>6</td>
<td>Dr. Shoba Srinath</td>
<td>Member</td>
<td>Professor of Child and</td>
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<td>Adolescent Psychiatry</td>
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</table>
7 Dr. AB Taly  
Professor of Neurology  
NIMHANS, Bengaluru – 560 029  

8 Dr. V Bhadrinarayan  
Medical Superintendent  
NIMHANS, Bengaluru – 560 029

---

**BOARD OF STUDIES**

**Basic Sciences**

1 Dr. V Ravi  
Prof. & Head  
Dept. of Neurovirology  
Dean (Basic Sciences)  
NIMHANS, Bengaluru – 560 029  

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Professor, National Centre for  
Biological Sciences  
Cell Organization and Signalling Lab  
Tata Institute of Fundamental Research  
GKV K, Bellary Road  
Bengaluru – 560 065.

3 Prof. Hemalatha Balaram  
Associate Professor  
Molecular Biology and Genetics Unit  
Jawaharlal Nehru Centre for  
Advanced Scientific Research  
Jakkur Post Office  
Bengaluru – 560 064

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Department of Biophysics  
NIMHANS, Bengaluru – 560 029

5 The Head  
Department of Biostatistics  
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6 The Head  
Department of Human Genetics  
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7 The Head  
Department of Neurochemistry  
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8 The Head  
Department of Neuromicrobiology  
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9 The Head  
Department of Neurophysiology  
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10 The Head  
Department of Neurovirology  
NIMHANS, Bengaluru – 560 029

11 The Head  
Department of Psychopharmacology  
NIMHANS, Bengaluru – 560 029

**Behavioural Sciences**

1 Dr. SK Chaturvedi  
Professor of Psychiatry and  
Dean (Behavioural Sciences)  
NIMHANS, Bengaluru – 560 029

2 Dr. Swaminath Gopala Rao  
Professor of Psychiatry  
#675, 11th Main, 45th Cross, 3rd Block,  
Rajajinagar, Bengaluru – 560 010

3 The Head  
Department of Child &  
Adolescent Psychiatry  
NIMHANS, Bengaluru – 560 029

4 The Head  
Department of Clinical Psychology  
NIMHANS, Bengaluru – 560 029
<table>
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<tr>
<th></th>
<th>The Head</th>
<th>Department of Psychiatric Rehabilitation</th>
<th>NIMHANS, Bengaluru – 560 029</th>
<th>Member</th>
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<th>The Head</th>
<th>Department of Psychiatric Social Work</th>
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<td>The Head</td>
<td>Department of Health Education</td>
<td>NIMHANS, Bengaluru – 560 029</td>
<td>Member</td>
<td>9</td>
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<td>Department of Psychiatry</td>
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<tr>
<td>7</td>
<td>The Head</td>
<td>Department of Nursing</td>
<td>NIMHANS, Bengaluru – 560 029</td>
<td>Member</td>
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</table>

**Neurosciences**

|   | The Head                          | Department of Neurosurgery                | NIMHANS, Bengaluru – 560 029 | Member | 7 | The Head                          | Department of Neurology               | NIMHANS, Bengaluru – 560 029     | Member |
|---|----------------------------------|-------------------------------------------|-------------------------------|--------|---|----------------------------------|---------------------------------------|                                 |--------|
| 8 |                                  |                                           |                               |        |   |                                  |                                       |                                 |        |
| 9 | The Head                         | Department of Neuro Imaging & Interventional Radiology | NIMHANS, Bengaluru – 560 029 | Member |    | The Head                         | Department of Neuropathology          | NIMHANS, Bengaluru – 560 029     | Member |
| 10|                                  |                                           |                               |        |   |                                  |                                       |                                 |        |
| 11| The Head                         | Department of Neurological Rehabilitation | NIMHANS, Bengaluru – 560 029 | Member |    | The Head                         | Department of Speech Pathology & Audiology | NIMHANS, Bengaluru – 560 029 | Member |
| 12|                                  |                                           |                               |        |   |                                  |                                       |                                 |        |
| 13| The Head                         | Department of Transfusion Medicine & Haematology | NIMHANS, Bengaluru – 560 029 | Member |    |                                  |                                       |                                 |        |
## REHABILITATION COMMITTEE

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
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<tbody>
<tr>
<td>1</td>
<td>Dr. BN Gangadhar</td>
<td>Chairman, Director</td>
<td>NIMHANS, Bengaluru – 560 029</td>
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<tr>
<td>2</td>
<td>Dr. K Sekar</td>
<td>Member</td>
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<td>Dr. SK Chaturvedi</td>
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<td>4</td>
<td>Dr. Prabha Chandra</td>
<td>Member</td>
<td>Head, Department of Psychiatry, NIMHANS, Bengaluru – 560 029</td>
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<tr>
<td>5</td>
<td>Dr. Anupam Gupta</td>
<td>Member</td>
<td>Head, Department of Neurological Rehabilitation, NIMHANS, Bengaluru – 560 029</td>
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<tr>
<td>6</td>
<td>Dr. A Mohan</td>
<td>Member</td>
<td>Professor &amp; Head, Dept. of Genito Urinary Surgery, St. John’s Medical College and Hospital, Bengaluru – 560 034</td>
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<tr>
<td>7</td>
<td>Dr. Ravishankar</td>
<td>Member</td>
<td>Consultant Orthopedic Surgeon, St. Philomena’s Hospital, No.1, Campbell Road, Vivek Nagar, Bengaluru – 560 047.</td>
<td></td>
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<tr>
<td>8</td>
<td>Dr. S. Kalyanasundaram</td>
<td>Member</td>
<td>Consultant Psychiatrist, Richmond Fellowship, “Asha”, No.501, 47th Cross, 9th Main, V Block, Jayanagar, Bengaluru – 560 041.</td>
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<tr>
<td>9</td>
<td>Ms. Suchetha Kular</td>
<td>Member</td>
<td>“Friends of NIMHANS”, 530, 5th Cross, Mahalaxmi Layout, Bengaluru – 560 086.</td>
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<tr>
<td>10</td>
<td>Dr. Kurien Zachariah</td>
<td>Member</td>
<td>Professor and Head, Dept. of Physical Medicine &amp; Rehabilitation, St. Johns Medical College &amp; Hospital, Bengaluru – 560 034.</td>
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<tr>
<td>11</td>
<td>Ms. Ruma Banerji</td>
<td>Vice Chairperson, SEVA-IN Action</td>
<td>36 ST Bed Layout, 1st Main, Koramangala, Bengaluru – 560 039.</td>
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<tr>
<td>12</td>
<td>Mr. Pranesh S.</td>
<td>Member</td>
<td>Managing Director, Prism Books Private Limited, 865,32nd Cross, Banashankari II Stage, Bengaluru - 560 070.</td>
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<td>13</td>
<td>Dr. Mahendra P Sharma</td>
<td>Member</td>
<td>Head, Department of Clinical Psychology, NIMHANS, Bengaluru – 560 029</td>
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<td>14</td>
<td>Dr. S Sampath</td>
<td>Member</td>
<td>Head, Department of Neurosurgery, NIMHANS, Bengaluru – 560 029</td>
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<td>15</td>
<td>Dr. Pramod Kumar Pal</td>
<td>Member</td>
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<td>16</td>
<td>Dr. D. Muralidhur</td>
<td>Member</td>
<td>Head, Department of Psychiatric Social Work, NIMHANS, Bengaluru – 560 029</td>
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<td>17</td>
<td>Dr. N. Shivashankar</td>
<td>Member</td>
<td>Head, Department of Speech Pathology &amp; Audiology, NIMHANS, Bengaluru – 560 029</td>
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<td>18</td>
<td>Dr. Ramachandra</td>
<td>Member</td>
<td>Head, Department of Nursing, NIMHANS, Bengaluru – 560 029</td>
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<td>19</td>
<td>Mr. Subroto Bagchi</td>
<td>Member</td>
<td>Chairman and CEO, Mindtree Limited, Bengaluru – 560 055.</td>
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<tr>
<td>20</td>
<td>Ms. Shanthi Raghavan</td>
<td>Member</td>
<td>Founder, EnAble India, No.12, KHB Colony (Ground Floor), Brahma Kumari’s Road, Koramangala 8th Block, Bengaluru – 560 095</td>
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<tr>
<td>21</td>
<td>Dr. Jagadisha Thirthalli</td>
<td>Member Secretary</td>
<td>Prof. &amp; Head, Psychiatric Rehabilitation Services, NIMHANS, Bengaluru – 560 029</td>
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# HUMAN ETHICS COMMITTEE

## Basic Sciences and Neurosciences

<table>
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<tr>
<td>1</td>
<td>Dr. Anura Vishwanath Kurpad</td>
<td>Chairman 8</td>
<td>Professor of Physiology, St. John's Medical College, St. John's National Academy of Health Sciences, Sarjapur Road, Bengaluru – 560 034</td>
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<tr>
<td>2</td>
<td>Dr. Udaykumar Ranga</td>
<td>Member 9</td>
<td>Professor HIV-AIDS Laboratory, Molecular Biology and Genetics Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Jakkur (PO), Bengaluru – 560 064</td>
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<td>3</td>
<td>Dr. Denis Xavier</td>
<td>Member 10</td>
<td>Professor of Pharmacology, Dept. of Pharmacology, St. John's Medical College, John Nagar, Sarjapur Road, Bengaluru – 560 034</td>
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<td>4</td>
<td>Dr. Ashok R. Patil</td>
<td>Member 11</td>
<td>Professor of Law, Dept. of Law, National Law School of India University, Post Bag No.7201, Nagarbhavi, Bengaluru – 560 072</td>
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<td>Dr. Rajaram Subbian</td>
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<td>No.C410, Cassia, Brigade Millennium, Bengaluru – 560 029</td>
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<td>6</td>
<td>Mrs. Malini Bhaskar Enaganti</td>
<td>Member 13</td>
<td>D403, Adarsh Residency, 8th Block, Jayanagar, Bengaluru – 560 070</td>
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<td>Dr. Galgali RB</td>
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<td>Shri. Vidyadhar MG</td>
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<td>Dr. Rita Christopher</td>
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<td>11</td>
<td>Dr. Vani Santosh</td>
<td>Member 18</td>
<td>Professor of Neurovirology and Dean (Basic Sciences), NIMHANS, Bengaluru – 560 029</td>
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<td>Dr. M Jayaram</td>
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<td>14</td>
<td>Dr. Sharat Damodar</td>
<td>Member 21</td>
<td>Clinical Director-MSMC, Mazumdar Shaw Medical Center, 258/A, Bommasandra Industrial Area, Anekal Taluk, Bengaluru Rural – 560 099</td>
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## Behavioural Sciences

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<tr>
<td>1</td>
<td>Dr. KS Nagesh, Ex-Principal</td>
<td>Chairman 2</td>
<td>DAPMRV Dental College and Hospital B-6, 801, Purvankara Elita Promenade Puttenahalli, JP Nagar, 7th Phase, Bengaluru – 560078</td>
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<td>2</td>
<td>Dr. G Gopalakrishnan</td>
<td>Member</td>
<td>Professor and HOD, Department of Psychiatry, MVJ Medical College and Research Hospital, 30th KM Milestone, NH4, Hoskote, Bengaluru – 562 114</td>
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</table>
ANIMAL ETHICS COMMITTEE

1. Dr. Anita S. Desai  
   Chairperson  
   Professor of Neurovirology  
   NIMHANS, Bengaluru – 560 029

2. Dr. Dhananjaya I Bhat  
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   NIMHANS, Bengaluru – 560 029

3. Dr. MM Srinivas Bharath  
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   NIMHANS, Bengaluru – 560 029

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   Member Secretary  
   Sr. Veterinary Officer (on contract) CARF  
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6. Dr. Thirumuoorthy  
   Member  
   Professor of Psychiatric Social Work  
   NIMHANS, Bengaluru – 560 029

7. Dr. S Ramachandra  
   Member  
   Professor and HOD, Pharmacology  
   Government College of Pharmacy  
   Subbaiah Circle  
   P Kalinga Rao Road  
   Bengaluru – 560 027

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   Non-Scientific  
   Socially Aware  
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   National Park Road  
   Bannerughatta  
   Bengaluru – 560 083

9. Dr. Sailaxmi Gandhi  
   Member  
   Additional Professor of Nursing  
   NIMHANS, Bengaluru – 560 029

10. Dr. Uma Hirisave  
    Member  
    Professor of Clinical Psychology  
    NIMHANS, Bengaluru – 560 029

11. Dr. Anita Mahadevan  
    Member  
    Additional Professor of Neuropathology,  
    NIMHANS, Bengaluru – 560 029

12. Dr. SK Chaturvedi  
    Member Secretary  
    Professor of Psychiatry & Dean  
    (Behavioural Sciences)  
    NIMHANS, Bengaluru – 560 029

13. Dr. Sharat Damodar  
    Stem Cell Expert  
    (Invitee Member for Stem Cell Projects)  
    Clinical Director-MSMC  
    Mazumdar Shaw Medical Center  
    258/A, Bommasandra Industrial Area,  
    Anekal Taluk, Bengaluru Rural – 560 099

14. Dr. Jagadisha Thirthahalli  
    Member  
    Professor of Psychiatry  
    NIMHANS, Bengaluru – 560 029

15. Dr. CR Jayanthi  
    Member  
    Professor of Pharmacology  
    Bangalore Medical College and  
    Research Institute (BMCRI)  
    Fort, KR Road  
    Bengaluru – 560 002

16. Shri. Boja Raj  
    Member (Legal Expert)  
    Advocate (Legal Expert)  
    No-1, 1st D Cross, 1st Stage, 20th Main  
    BTM, Bengaluru – 560 029

17. Shri. Sadananda Holla  
    Member  
    No-269, Sri Krishna, 18th Cross  
    Sampige Road, Malleshwaram  
    Bengaluru – 560 003

18. Ms. Ammu Joseph  
    Member  
    Independent Journalist and Author  
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    Koramangala, Bengaluru – 560 034

19. Dr. Jagadisha Thirthahalli  
    Member  
    Professor of Psychiatry  
    NIMHANS, Bengaluru – 560 029

20. Dr. Thirumuoorthy  
    Member  
    Professor of Psychiatric Social Work  
    NIMHANS, Bengaluru – 560 029

21. Dr. Sailaxmi Gandhi  
    Member  
    Additional Professor of Nursing  
    NIMHANS, Bengaluru – 560 029

22. Dr. Uma Hirisave  
    Member  
    Professor of Clinical Psychology  
    NIMHANS, Bengaluru – 560 029

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    NIMHANS, Bengaluru – 560 029

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    NIMHANS, Bengaluru – 560 029

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    Member  
    Additional Professor of Nursing  
    NIMHANS, Bengaluru – 560 029

50. Dr. Uma Hirisave  
    Member  
    Professor of Clinical Psychology  
    NIMHANS, Bengaluru – 560 029

51. Dr. Anita Mahadevan  
    Member  
    Additional Professor of Neuropathology,  
    NIMHANS, Bengaluru – 560 029

52. Dr. SK Chaturvedi  
    Member Secretary  
    Professor of Psychiatry & Dean  
    (Behavioural Sciences)  
    NIMHANS, Bengaluru – 560 029

53. Dr. Sharat Damodar  
    Stem Cell Expert  
    (Invitee Member for Stem Cell Projects)  
    Clinical Director-MSMC  
    Mazumdar Shaw Medical Center  
    258/A, Bommasandra Industrial Area,  
    Anekal Taluk, Bengaluru Rural – 560 099

54. Dr. Jagadisha Thirthahalli  
    Member  
    Professor of Psychiatry  
    NIMHANS, Bengaluru – 560 029
Basic Sciences

1 Dr. Chittaranjan Andrade
Professor and Head of Psychopharmacology
NIMHANS, Bengaluru – 560 029

2 Dr. MK Mathew
Professor, Laboratory of Membrane Biophysics, National Centre for Biological Sciences, TIFR
Bellary Road, Bengaluru – 560 065

3 Dr. Udaykumar Ranga
Professor, HIV-AIDS Laboratory Molecular Biology and Genetics Unit Jawaharlal Nehru Centre for Advanced Scientific Research Jakkur (PO), Bengaluru – 560 064

4 The Head
Department of Biophysics
NIMHANS, Bengaluru – 560 029

5 The Head
Chairman
Department of Biostatistics
NIMHANS, Bengaluru – 560 029

6 The Head
Member
Department of Human Genetics
NIMHANS, Bengaluru – 560 029

7 The Head
Member
Department of Neurochemistry
NIMHANS, Bengaluru – 560 029

8 The Head
Member
Department of Neuromicrobiology
NIMHANS, Bengaluru – 560 029

9 The Head
Member
Department of Neurophysiology
NIMHANS, Bengaluru – 560 029

10 The Head
Member
Department of Neurovirology
NIMHANS, Bengaluru – 560 029

Behavioural Sciences

1 Dr. SK Chaturvedi
Professor of Psychiatry and
Dean (Behavioural Sciences)
NIMHANS, Bengaluru – 560 029

2 Dr. RB Galgali
Professor, Department of Psychiatry
St. John's Medical College Hospital
Sarjapur Road, Bengaluru – 560 034

3 Dr. Rameela Shekhar
Professor of Medical & Psychiatric Social Work and Dean, PG Department School of Social Work
Roshini Nilaya, Mangalore - 575 002

4 The Head
Department of Child & Adolescent Psychiatry
NIMHANS, Bengaluru – 560 029

5 The Head
Chairman
Department of Clinical Psychology
NIMHANS, Bengaluru – 560 029

6 The Head
Member
Department of Health Education
NIMHANS, Bengaluru – 560 029

7 The Head
Member
Department of Psychiatric Rehabilitation
NIMHANS, Bengaluru

8 The Head
Member
Department of Nursing
NIMHANS, Bengaluru – 560 029

9 The Head
Member
Department of Psychiatric Social Work
NIMHANS, Bengaluru – 560 029

9 The Head
Member
Department of Psychiatry
NIMHANS, Bengaluru – 560 029
Neurosciences

1. **Prof. M Jayaram**
   Sr. Professor of Speech Pathology & Audiology
   Dean (Neurosciences)
   NIMHANS, Bengaluru – 560 029
   **Chairman**

2. **Dr. A.K. Meena**
   Professor of Neurology
   Nizam’s Institute of Medical Sciences (NIMS)
   Panjagutta, Hyderabad – 500 082
   **Member**

3. **Dr. Ravi Gopal Varma**
   Lead-Consultant Neurosurgeon and Chief of Neurosciences
   Center of Excellence – Brain & Spine,
   Aster CMI Hospital
   No. 43/2, Intel. Airport Road, Sahakara Nagar, Bengaluru – 560 092
   **Member**

4. **The Head**
   Department of Clinical Neurosciences (Virtual Department)
   NIMHANS, Bengaluru – 560 029
   **Member**

5. **The Head**
   Department of Epidemiology
   NIMHANS, Bengaluru – 560 029
   **Member**

6. **The Head**
   Department of Neuroanaesthesia
   NIMHANS, Bengaluru – 560 029
   **Member**

7. **The Head**
   Department of Neuro Imaging & Interventional Radiology
   NIMHANS, Bengaluru – 560 029
   **Member**

8. **The Head**
   Department of Neurological Rehabilitation
   NIMHANS, Bengaluru – 560 029
   **Member**

9. **The Head**
   Department of Neurology
   NIMHANS, Bengaluru – 560 029
   **Member**

10. **The Head**
    Department of Neuropathology
    NIMHANS, Bengaluru – 560 029
    **Member**

11. **The Head**
    Department of Neurosurgery
    NIMHANS, Bengaluru – 560 029
    **Member**

12. **The Head**
    Department of Speech Pathology & Audiology
    NIMHANS, Bengaluru – 560 029
    **Member**

13. **The Head**
    Department of Transfusion Medicine and Haematology
    NIMHANS, Bengaluru – 560 029
    **Member**

INSTITUTIONAL BIO SAFETY COMMITTEE

1. **Dr. Sanjeev Jain**
   Professor of Psychiatry
   NIMHANS, Bengaluru – 560 029
   **Chairperson**

2. **Dr. Rita Christopher**
   Professor of Neurochemistry
   NIMHANS, Bengaluru – 560 029
   **Member Secretary**

3. **Dr. Vani Santosh**
   Professor of Neuropathology
   NIMHANS, Bengaluru – 560 029
   **Member**

4. **Dr. Anita Desai**
   Professor of Neurovirology
   NIMHANS, Bengaluru – 560 029
   **Member**

5. **Dr. Biju Vishwanath**
   Assistant Professor of Psychiatry
   NIMHANS, Bengaluru – 560 029
   **Member**

6. **Dr. Jaishree**
   Professor of Microbiology
   Kidwai Memorial Institute of Oncology, Bengaluru – 560 029
   **Outside Expert**

7. **Dr. Nandakumar DN**
   Additional Professor of Neurochemistry
   NIMHANS, Bengaluru – 560 029
   **Medical Officer/Biosafety Officer**

8. **Dr. Anuranjan Anand**
   Professor, Molecular Biology & Genetics Unit
   JNCASR, Bengaluru – 560 064
   **Nominee of DBT**
## Faculty and Staff

### Dean

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
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<tbody>
<tr>
<td>Dr. M. Jayaram</td>
<td>Sr. Professor of Speech Pathology and Audiology and Dean, Neurosciences</td>
</tr>
<tr>
<td>Dr. S.K. Chaturvedi</td>
<td>Professor of Psychiatry and Dean, Behavioural Sciences</td>
</tr>
<tr>
<td>Dr. V. Ravi</td>
<td>Professor of Neurovirology and Dean, Basic Sciences</td>
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### Biophysics

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<th>Name</th>
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<tbody>
<tr>
<td>Dr. Preeti G. Joshi</td>
<td>Professor &amp; Head</td>
</tr>
<tr>
<td>Dr. Balasundaram Padmanabhan</td>
<td>Professor</td>
</tr>
<tr>
<td>Dr. Indrani Datta</td>
<td>Assistant Professor</td>
</tr>
<tr>
<td>Dr. Bhupej Mehta</td>
<td>Assistant Professor</td>
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### Biostatistics

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<tr>
<td>Dr. K. Thennarasu</td>
<td>Professor &amp; Head</td>
</tr>
<tr>
<td>Dr. P. Marimuthu</td>
<td>Additional Professor</td>
</tr>
<tr>
<td>Dr. Mariamma Philip</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>Dr. Binukumar B.</td>
<td>Assistant Professor</td>
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</table>

### Child & Adolescent Psychiatry

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<tr>
<td>Dr. Shekhar P. Seshadri</td>
<td>Professor &amp; Head</td>
</tr>
<tr>
<td>Dr. Shoba Srinath</td>
<td>Sr. Professor</td>
</tr>
<tr>
<td>Dr. Satish Chandra Girimaji</td>
<td>Professor</td>
</tr>
<tr>
<td>Dr. K. John Vijay Sagar</td>
<td>Additional Professor</td>
</tr>
<tr>
<td>Dr. Preeti Jacob</td>
<td>Assistant Professor</td>
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### Clinical Neurosciences (Virtual Department)

<table>
<thead>
<tr>
<th>Name</th>
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<tbody>
<tr>
<td>Dr. John P. John</td>
<td>Professor of Psychiatry &amp; Head of Clinical Neurosciences</td>
</tr>
<tr>
<td>Dr. M.M. Srinivas Bharath</td>
<td>Additional Professor of Neurochemistry</td>
</tr>
<tr>
<td>Dr. Arivazhagan A.</td>
<td>Additional Professor of Neurosurgery</td>
</tr>
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### Clinical Psychology

<table>
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<th>Name</th>
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<tbody>
<tr>
<td>Dr. Mahendra Prakash Sharma</td>
<td>Professor &amp; Head</td>
</tr>
<tr>
<td>Dr. Ahalya Raguram</td>
<td>Professor</td>
</tr>
<tr>
<td>Dr. H. Uma</td>
<td>Professor</td>
</tr>
</tbody>
</table>
Dr. Anisha Shah  Professor
Dr. L.N. Suman  Professor
Dr. Seema Mehrotra  Professor
Dr. Jamuna Rajeswaran  Professor
Dr. Paulomi Matam Sudhir  Professor
Dr. J. Keshav Kumar  Professor
Dr. Manoj Kr. Sharma  Additional Professor
Dr. M. Manjula  Additional Professor
Dr. Devvarta Kumar  Additional Professor
Dr. Poornima Bholu  Additional Professor
Dr. B N Roopesh  Associate Professor
Dr. Thomas Kishore M  Associate Professor
Dr. Veena A.S.  Assistant Professor
Dr. Aruna Rose Mary Kapanee  Assistant Professor
Dr. Shantala Hegde  Assistant Professor
Dr. Rajakumari P. Reddy  Assistant Professor
Dr. Nitin Anand  Assistant Professor
Dr. Nithiya Poornima M.  Assistant Professor
Dr. Gitanjali Narayanan  Assistant Professor
Dr. Jyotsna Agrawal  Assistant Professor
Dr. Ajay Kumar  Assistant Professor
Dr. Himani Kashyap  Assistant Professor

### Epidemiology

- Dr. G. Gururaj  Sr. Professor & Head
- Dr. N. Girish  Professor
- Dr. Pradeep B.S.  Additional Professor
- Dr. Gautham M.S.  Associate Professor
- Dr. Senthil Amudhan R.  Associate Professor
- Dr. B.A. Aravind  Assistant Professor

### Human Genetics

- Dr. Rajalakshmi Gope  Professor (Retired on 28-02-2017)
- Dr. G.K. Chetan  Additional Professor & Head
- Dr. Monojit Debnath  Associate Professor
- Dr. Mathivanan Jothi  Assistant Professor

### Mental Health Education

- Dr. S.K. Chaturvedi  Professor of Psychiatry & I/c Head
- Dr. K.S. Meena  Associate Professor

### Neuroanaesthesia & Neurocritical Care

- Dr. V.J. Ramesh  Professor & Head
- Dr. G.S. Umamaheswara Rao  Sr. Professor
Dr. V. Bhadrinarayan  Professor
Dr. K.R. Madhusudan Reddy  Professor
Dr. M. Radhakrishnan  Additional Professor
Dr. K. Sriganesh  Additional Professor
Dr. Sudhir V.  Associate Professor
Dr. Gopala Krishna K.N.  Associate Professor
Dr. Sonia Bansal  Assistant Professor
Dr. Rohini M. Surve  Assistant Professor of Critical Care
Dr. Dhritiman Chakrabarti  Assistant Professor
Dr. Suparna Bharadwaj  Assistant Professor
Dr. Shewta S. Naik  Assistant Professor

**Neurochemistry**

Dr. Rita Christopher  Professor & Head
Dr. Sarada Subramanian  Additional Professor
Dr. M.M. Srinivas Bharath  Additional Professor
Dr. Nandakumar D.N.  Additional Professor
Dr. Ravish H.  Assistant Professor
Dr. Kruthika Vinod T.P.  Sr. Scientific Officer

**Neuro Imaging & Interventional Radiology**

Dr. Arun Kumar Gupta  Professor & Head
Dr. Rose Dawn Bharath  Additional Professor
Dr. Hima Shrinivas Pendharkar  Additional Professor
Dr. Arvinda H.R.  Additional Professor
Dr. Jitender Saini  Additional Professor
Dr. Chandrajit Prasad  Assistant Professor
Dr. Maya Dattatraya Bhat  Associate Professor
Dr. M. Sandhya  Assistant Professor
Dr. Chandana  Assistant Professor (Nuclear Medicine)

**Neurological Rehabilitation**

Dr. Anupam Gupta  Professor & Head
Dr. Meeka Khanna  Associate Professor

**Neurology**

Dr. Pramod Kumar Pal  Professor & Head
Dr. P. Sathichandra  Sr. Professor
Dr. Arun Kumar B.Taly  Professor
Dr. M. Veerendra Kumar  Professor
Dr. S.R. Chandra  Professor
Dr. A. Nalini  Professor
Dr. Sanjib Sinha  Professor
Dr. Suvarna Alladi  Professor
Dr. P. S. Bindu  Professor
Dr. P.S. Mathurnath  Additional Professor
Dr. Girish Baburao Kulkarni  Additional Professor
Dr. Ravi Yadav  Additional Professor
Dr. Netravathi M.  Additional Professor
Dr. Madhu N.  Associate Professor
Dr. Subasree R.  Assistant Professor
Dr. Ravindranadh Chowdary  Assistant Professor
Dr. Pooja M.  Assistant Professor
Dr. Raghavendra K.  Assistant Professor
Dr. Nitish Kamble  Assistant Professor
Dr. Srijithesh P.R.  Assistant Professor
Dr. Nikhil C. Hiremath  Assistant Professor (on Contract)

Neuromicrobiology

Dr. Shripad A. Patil  Professor & Head
Dr. R. Ravikumar  Professor
Dr. S. Nagarathna  Professor
Dr. H.B. Veena Kumari  Additional Professor

Neuropathology

Dr. S.K. Shankar  Emeritus Professor (Till 31-01-2017)
Dr. Vani Santosh  Professor & Head
Dr. T.C. Yasha  Professor
Dr. N. Gayathri  Professor
Dr. B.K. Chandrasekhar Sagar  Additional Professor
Dr. Anita Mahadevan  Additional Professor
Dr. Nandeesh B.N.  Assistant Professor

Neurophysiology

Dr. Bindu M. Kutty  Professor & Head
Dr. T.R. Raju  Sr. Professor (Retired on 31-03-2017)
Dr. T.N. Sathyaprabha  Professor
Dr. B.S. Shankaranarayana Rao  Professor
Dr. Laxmi T. Rao  Additional Professor
Dr. Vijayalakshmi K.  Assistant Professor
Dr. Srikumar B.N.  Assistant Professor
Dr. Phalguni Anand Alladi  Sr. Scientific Officer

Neurosurgery

Dr. Malla Bhaskara Rao  Professor & Head
Dr. B. Indira Devi  Professor
Dr. S. Sampath  Professor
Dr. Dhananjaya I. Bhat  Professor
Dr. Dwarakanath Srinivas  Professor
Dr. Dhaval P. Shukla  Professor
Dr. A. Arivazhagan  Additional Professor
Dr. Nupur Pruthi  Additional Professor
Dr. KVL Narasinga Rao  Additional Professor
Dr. V. Vikas  Associate Professor
Dr. A.R. Prabu Raj  Assistant Professor
Dr. Amey Rajan Savardekar  Assistant Professor (Resigned & relieved on 26-12-2016)
Dr. Nishanth Sadashiva  Assistant Professor
Dr. Manish Beniwal  Assistant Professor
Dr. Subhas Kanti Konar  Assistant Professor
Sri. N. Ponnuswamy  Sr. Scientific Officer (Radiation Safety)

Neurovirology

Dr. Anita S. Desai  Professor & Head
Dr. V. Ravi  Professor
Dr. Reeta Subramaniam Mani  Associate Professor
Dr. Manjunatha V.  Senior Scientific Officer (on Contract)

Nursing

Dr. Sailaxmi Gandhi  Additional Professor & Head
Dr. K. Lalitha  Professor (Retired on 31-01-2017)
Dr. Ramachandra  Professor (Retired on 28-02-2017)
Dr. Prasanthi Nattala  Associate Professor
Dr. G. Radhakrishnan  Assistant Professor

College of Nursing

Dr. B.V. Kathyayani  Principal
Dr. Pratibha Swamy  Associate Professor
Dr. Jayanthi K.N.  Lecturer
Mr. Jayakumar B.  Lecturer
Mrs. Poornima H.N.  Lecturer
Dr. Priya Baby  Lecturer
Mrs. D. Kanitha  Lecturer
Dr. S. Valliammal  Lecturer
Dr. Rajeswari C.  Lecturer
Ms. Jeeva S.  Lecturer

Psychiatry

Dr. B.N. Gangadhar  Professor & Director
Dr. Prabha S. Chandra  Professor & Head
Dr. S.K. Chaturvedi  Professor
Dr. Sanjeev Jain  Professor
Dr. Mathew Varghese Professor
Dr. Pratima Murthy Professor
Dr. Srikala Bharath Professor (Retired on 20-05-2016 - VRS)
Dr. Y.C. Janardhana Reddy Professor
Dr. Vivek Benegal Professor
Dr. Jagadisha Thirthalli Professor
Dr. John P. John Professor
Dr. Suresh Bada Math Professor
Dr. G. Venkatasubramanian Professor
Dr. P.T. Sivakumar Professor
Dr Geetha Desai Additional Professor
Dr. Shivarama Varambally Additional Professor
Dr. Prabhat Kumar Chand Additional Professor
Dr. K. Muralidharan Additional Professor
Dr. T. Harish Additional Professor
Dr. Santosh Loganathan Additional Professor
Dr. V. Senthil Kumar Reddi Additional Professor
Dr. C. Naveen Kumar Additional Professor
Dr. Shyam Sundar A. Associate Professor
Dr. Preeti Sinha Associate Professor
Dr. Naren P. Associate Professor
Dr. Jaisoorya T.S. Associate Professor
Dr. Krishna Prasad M. Associate Professor
Dr. Arun K. Associate Professor
Dr. T Sivakumar Associate Professor
Dr. Syed Moirangthem Associate Professor
Dr. N Manjunatha Assistant Professor
Dr. Janardhanan C.N. Assistant Professor
Dr. Biju Viswanath Assistant Professor
Dr. Urvakhsh Meherwan Mehta Assistant Professor
Dr. Sundarnag Ganjekar Assistant Professor
Dr. Dahale Ajit Bhalchandra Assistant Professor
Dr. Angothu Hareesh Assistant Professor
Dr. Deepak Jayarajan Assistant Professor
Dr. Shashidhara H.N. Psychiatrist (Specialist Grade)
Dr. Vijaya Kumar K.G. Assistant Professor

Psychiatric Rehabilitation

Dr. Jagadisha Thirthalli Professor of Psychiatry and I/c Head
Dr. S.K. Chatuvadi Professor of Psychiatry
Dr. Dewvarta Kumar Additional Professor of Clinical Psychology
Dr. Poornima Bhola Additional Professor of Clinical Psychology
Dr. C. Naveen Kumar Additional Professor of Psychiatry
Dr. Krishna Prasad M. Associate Professor of Psychiatry
Dr. Sivakumar T. Associate Professor of Psychiatry
Dr. Radhakrishnan G. Assistant Professor of Nursing
Dr. Aarti Jagannathan Assistant Professor of Psychiatric Social work,
Dr. Hareesh Angothu Assistant Professor of Psychiatry
Dr. Deepak Jayarajan Assistant Professor of Psychiatry
### Psychiatric Social Work

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
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<tbody>
<tr>
<td>Dr. D. Muralidhar</td>
<td>Professor &amp; Head</td>
</tr>
<tr>
<td>Dr. K. Sekar</td>
<td>Professor</td>
</tr>
<tr>
<td>Dr. A. Thirumoorthy</td>
<td>Professor</td>
</tr>
<tr>
<td>Dr. N. Krishna Reddy</td>
<td>Additional Professor</td>
</tr>
<tr>
<td>Dr. R. Dhanasekara Pandian</td>
<td>Additional Professor</td>
</tr>
<tr>
<td>Dr. Mohammed Ameer Hamza</td>
<td>Additional Professor</td>
</tr>
<tr>
<td>Dr. B.P. Nirmala</td>
<td>Additional Professor</td>
</tr>
<tr>
<td>Dr. N. Janardhana</td>
<td>Additional Professor</td>
</tr>
<tr>
<td>Dr. Vranda M.N.</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>Dr. E. Aravind Raj</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>Dr. Gobinda Majihi</td>
<td>Assistant Professor</td>
</tr>
<tr>
<td>Dr. Kavitha V. Jangam</td>
<td>Assistant Professor</td>
</tr>
<tr>
<td>Dr. Priya Treesa Thomas</td>
<td>Assistant Professor</td>
</tr>
<tr>
<td>Dr. Aarti Jaganthan</td>
<td>Assistant Professor</td>
</tr>
<tr>
<td>Dr. E. Sinu</td>
<td>Assistant Professor</td>
</tr>
<tr>
<td>Dr. C. Jayakumar</td>
<td>Assistant Professor</td>
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<tr>
<td>Dr. Bino Thomas</td>
<td>Assistant Professor</td>
</tr>
<tr>
<td>Dr. Sojan Antony</td>
<td>Assistant Professor</td>
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<tr>
<td>Dr. Kanmani T.R.</td>
<td>Assistant Professor</td>
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<tr>
<td>Dr. Anish V. Cherian</td>
<td>Assistant Professor</td>
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### Psychopharmacology

<table>
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<tr>
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<tbody>
<tr>
<td>Dr. Chittaranjan Andrade</td>
<td>Professor &amp; Head</td>
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### Speech Pathology & Audiology

<table>
<thead>
<tr>
<th>Name</th>
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<tbody>
<tr>
<td>Dr. M. Jayaram</td>
<td>Sr. Professor &amp; Head</td>
</tr>
<tr>
<td>Dr. N. Shivashankar</td>
<td>Professor</td>
</tr>
<tr>
<td>Dr. Vandana V.P.</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>Dr. B.K. Yamini</td>
<td>Associate Professor</td>
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### Transfusion Medicine & Haematology

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<tbody>
<tr>
<td>Dr. Sundar Periyavan</td>
<td>Professor &amp; Head</td>
</tr>
<tr>
<td>Dr. Sangeetha Seshagiri K.</td>
<td>Clinical Pathologist (Specialist Grade)</td>
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### Ayurvedic Research Unit

<table>
<thead>
<tr>
<th>Name</th>
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<tbody>
<tr>
<td>Dr. D. Sudhakar</td>
<td>Assistant Director</td>
</tr>
<tr>
<td>Dr. G. Venkateswaralu</td>
<td>Research Officer</td>
</tr>
<tr>
<td>Dr. Srinibash Sahoo</td>
<td>Research Officer</td>
</tr>
<tr>
<td>Dr. G.V. Ramana</td>
<td>Research Officer</td>
</tr>
<tr>
<td>Dr. Sudhakumari K.G.</td>
<td>Research Officer</td>
</tr>
<tr>
<td>Dr. C. Tejaswini</td>
<td>Research Officer</td>
</tr>
</tbody>
</table>
Biomedical Engineering Section

Smt. M.G. Sindu  Biomedical Engineer
Sri. J. Nataraja  Sr. Scientific Assistant, Biomedical Engineer, Gr. II
Sri. S.N. Jein  Sr. Scientific Assistant, Biomedical Engineer, Gr. II
Sri. Elangovan  Hardware & Network Engineer

Central Animal Research Facility

Dr. B.S. Shankaranarayana Rao  Professor of Neurophysiology & Officer I/c

Library & Information Services

Dr. M. Jayaram  Sr. Professor of Speech of Pathology & Audiology and Officer I/c
Smt. Lalitha Koti  Sr. Librarian
Sri. P. Sulochanan  Librarian
Sri. Prasad N.N.  Librarian

Publication Department

Sri. Prabhu Dev M.  Assistant Editor and Officer I/c
Smt. Tejaswini A.  Proof Reader

Public Relations

Sri. Praseed Kumar  Public Relations Officer
Sri. A.S. Revappa  Assistant Horticulture Officer

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Sri. P. Karunakara Gandhi  Legal Assistant (on Deputation)

Internal Auditors

Sri. Kunhikrishnan  Consultant
Sri. P. Sukumar  Internal Audit Officer

Engineering Department

Shri. N.L. Satish  AEE and Head (on Deputation)
Shri. B.T. Sridhar  Assistant Engineer (Civil)
Shri. N.R. Nagaraju  Assistant Engineer (Civil) (on Deputation)
Shri. K.C. Santhosh  Assistant Engineer (Civil) (on Deputation)
Shri. Prakash C. Kakkayanawar  Junior Engineer (Electrical)
Shri. H.N. Vittal Rao  Junior Engineer (Electrical) (Retired on 30-04-2016)
Shri. Chaluvaraj  Junior Engineer (Electrical)
Shri. Parameshwar Dhanni  Junior Engineer (Electrical)

**Administration**

Dr. K. Sekar  Registrar
Shri. R. Timothy Raj  Dy. FA & CAO
Shri. M.N. Shankarsa  Chief Administrative Officer (Retired on 31-03-2017)
Shri. Venkatesh S.  Special Officer (Purchase) (Retired on 31-05-2016)
Shri. Thanappa  Special Officer I/c
Shri. Parameshwara M.  Administrative Officer
Shri. Prabhakhar K.  AAO (Accounts)
Smt. Umavathy G.  AAO (Purchase)
Smt. Revathi B.K.  AAO (Academic and Evaluation)
Shri. T. Ravi  AAO (Claims) (Retired on 29-11-2016 – VRS)
Smt. B.P. Srilatha  AAO (Claims)
Smt. Helen Regina  AAO (Co-ordination)
Smt. Veena M.  AAO (Accounts)
Shri. Rethish Kumar T.K.  Accounts Officer (on Deputation)
Shri. G.S. Harish  Accounts Officer (on Deputation)
Shri. R. Ashwath Narayana  AAO (Project)

**Hospital Administration**

Dr. V. Bhadrinarayan  Medical Superintendent
Dr. K. Muralidharan  Dy. Medical Superintendent
Dr. V.S. Chandrashekar  Resident Medical Officer (on Contract)
Dr. M.R. Mohan Kumar  Sr. GDMO
Dr. T.N. Prathiba  Sr. GDMO
Dr. A.S.V.L.N. Ravindra  Sr. GDMO
Dr. Pradnya Rajesh Dhargave  Chief Physiotherapist
Smt. T. Chandramathi  AAO (Hospital Staff Section)
Shri. D.M. Prasad  AAO I/c (OPD)
Sri. Boregowda  Medical Records Officer (Retired on 31-05-2016)
Sri. M.L. Laxman Rao  Jr. Medical Records Officer (Retired on 30-09-2016)
Smt. Premalatha  Jr. Medical Records Officer (Retired on 31-01-2017)
Shri. Rajanna  Jr. Medical Records Officer
# Annual Report 2016-2017

## National Institute of Mental Health and Neuro Sciences

### Balance Sheet as at 31st March 2017

(Rs. In Lakh)

<table>
<thead>
<tr>
<th>CORPUS / CAPITAL FUND &amp; LIABILITIES</th>
<th>SCHEDULE</th>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAPITAL FUND</td>
<td>1</td>
<td>29,221.43</td>
<td>36,552.35</td>
</tr>
<tr>
<td>ASSET RESERVE-PROJECTS</td>
<td>5</td>
<td>1,154.31</td>
<td>3,051.93</td>
</tr>
<tr>
<td>PROJECTS, SEMINARS, WORKSHOPS, ETC.,</td>
<td>2</td>
<td>4,624.91</td>
<td>2,997.92</td>
</tr>
<tr>
<td>EARMARKED / ENDOWMENT FUNDS</td>
<td>3</td>
<td>66,223.00</td>
<td>47,884.24</td>
</tr>
<tr>
<td>CURRENT LIABILITIES AND PROVISIONS</td>
<td>4</td>
<td>6,331.87</td>
<td>4,154.94</td>
</tr>
</tbody>
</table>

**TOTAL**

<table>
<thead>
<tr>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,07,555.52</td>
<td>94,641.38</td>
</tr>
</tbody>
</table>

### ASSETS

<table>
<thead>
<tr>
<th>ASSETS</th>
<th>SCHEDULE</th>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED ASSETS</td>
<td>5</td>
<td>39,090.60</td>
<td>38,343.55</td>
</tr>
<tr>
<td>INVESTMENTS - FROM EARMARKED / ENDOWMENT FUNDS</td>
<td>6</td>
<td>32,401.43</td>
<td>26,022.60</td>
</tr>
<tr>
<td>INVESTMENT - OTHERS</td>
<td>7</td>
<td>11,783.94</td>
<td>10,442.19</td>
</tr>
<tr>
<td>CURRENT ASSETS, LOANS, ADVANCES ETC.,</td>
<td>8</td>
<td>24,279.55</td>
<td>19,833.04</td>
</tr>
</tbody>
</table>

**TOTAL**

<table>
<thead>
<tr>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,07,555.52</td>
<td>94,641.38</td>
</tr>
</tbody>
</table>

### Significant Accounting Policies

17

### Notes on Accounts

18

-Sd-
Deputy Financial Advisor &
Chief Accounts Officer

-Sd-
REGISTRAR

-Sd-
DIRECTOR
### Income & Expenditure Account for the Year Ended 31st March 2017

<table>
<thead>
<tr>
<th>PARTICULARS</th>
<th>SCHEDULE</th>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INCOME</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income from Services</td>
<td>9</td>
<td>3,219.34</td>
<td>3,036.02</td>
</tr>
<tr>
<td>Grants / Subsidies</td>
<td>10</td>
<td>30,834.34</td>
<td>26,833.12</td>
</tr>
<tr>
<td>Fees / Subscriptions</td>
<td>11</td>
<td>580.80</td>
<td>685.60</td>
</tr>
<tr>
<td>Income From Government Securities/ Bonds</td>
<td>12</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Income from Investments</td>
<td>13</td>
<td>1,630.01</td>
<td>1,635.83</td>
</tr>
<tr>
<td>Other Income</td>
<td>14</td>
<td>801.03</td>
<td>873.22</td>
</tr>
<tr>
<td><strong>TOTAL (A)</strong></td>
<td></td>
<td>37,065.52</td>
<td>33,063.79</td>
</tr>
<tr>
<td><strong>EXPENDITURE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establishment Expenses</td>
<td>15</td>
<td>38,301.51</td>
<td>16,422.22</td>
</tr>
<tr>
<td>Other Administrative Expenses etc.,</td>
<td>16</td>
<td>7,528.98</td>
<td>11,827.35</td>
</tr>
<tr>
<td>Depreciation</td>
<td>5</td>
<td>4,905.15</td>
<td>4,737.67</td>
</tr>
<tr>
<td><strong>TOTAL (B)</strong></td>
<td></td>
<td>50,735.64</td>
<td>32,987.24</td>
</tr>
<tr>
<td>Balance being excess of Income over Expenditure (A-B)</td>
<td>(13,670.12)</td>
<td>76.55</td>
<td></td>
</tr>
<tr>
<td>Transfer to Capital Account</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>37,065.52</td>
<td>33,063.79</td>
</tr>
<tr>
<td><strong>SIGNIFICANT ACCOUNTING POLICIES</strong></td>
<td>17</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td><strong>NOTES ON ACCOUNTS</strong></td>
<td>18</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

-Sd- Deputy Financial Advisor &
Chief Accounts Officer

-Sd- REGISTRAR

-Sd- DIRECTOR
## Receipts and Payments for the Year 2016-17

(Rs. in Lakh)

<table>
<thead>
<tr>
<th>I. Opening Balances</th>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Cash in hand</td>
<td>3.87</td>
<td>3.82</td>
</tr>
<tr>
<td>b) Bank Balances</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Savings Accounts</td>
<td>1,590.60</td>
<td>2,657.69</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>II. Grants Received</th>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) From Govt. of India</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) Plan</td>
<td>14,630.00</td>
<td>14,000.00</td>
</tr>
<tr>
<td>ii) Non-Plan</td>
<td>16,840.22</td>
<td>13,623.37</td>
</tr>
<tr>
<td>iii) De-Addiction Centre</td>
<td>670.00</td>
<td>650.00</td>
</tr>
<tr>
<td>b) From State Govt.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) Plan</td>
<td>574.20</td>
<td>400.00</td>
</tr>
<tr>
<td>ii) Non-Plan</td>
<td>5,489.00</td>
<td>5,100.00</td>
</tr>
</tbody>
</table>

| c) From Other Sources |         |         |
| i) Aided Projects - Grants for Projects seminars / symposium / workshops etc | 5,006.60 | 3,763.70 |

<table>
<thead>
<tr>
<th>III. Income on Investments from</th>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Earmarked / Endowment Funds including other investments]</td>
<td>1,616.09</td>
<td>1,070.71</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I. Expenses</th>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Establishment Expenses</td>
<td>17,764.71</td>
<td>16,788.48</td>
</tr>
<tr>
<td>b) Administrative Expenses</td>
<td>7,110.81</td>
<td>8,073.14</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>II. Payments made against funds for various projects</th>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aided Projects - Grants for Projects / Seminars / Symposiums / Workshops etc.,</td>
<td>3,393.58</td>
<td>1,929.92</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>III. Investments and Deposits made</th>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Out of earmarked / endowment funds</td>
<td>21,117.26</td>
<td>20,605.80</td>
</tr>
<tr>
<td>b) Out of own funds - Short term investment in Banks</td>
<td>30,988.44</td>
<td>34,234.50</td>
</tr>
<tr>
<td>c) LC Margin Money including opening charges</td>
<td>702.45</td>
<td>8,017.61</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IV. Expenditure on Fixed Assets &amp; Capital Work-in-Progress</th>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Purchase of Fixed Assets and Capital Work in Progress</td>
<td>8,011.49</td>
<td>5,521.03</td>
</tr>
<tr>
<td>b) Advances to suppliers</td>
<td>5,774.81</td>
<td>1,919.53</td>
</tr>
<tr>
<td>c) E-Journals Data Base Access</td>
<td>436.42</td>
<td>100.42</td>
</tr>
</tbody>
</table>
### IV. Interest Received

<table>
<thead>
<tr>
<th>Category</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>On Bank Deposits</td>
<td>680.45</td>
<td>668.55</td>
</tr>
</tbody>
</table>

### V. Income

<table>
<thead>
<tr>
<th>Category</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Hospital Receipts</td>
<td>3,005.93</td>
<td>2,874.78</td>
</tr>
<tr>
<td>b) General Donations</td>
<td>27.57</td>
<td>5.57</td>
</tr>
<tr>
<td>c) Miscellaneous Receipts</td>
<td>42.08</td>
<td>35.73</td>
</tr>
<tr>
<td>d) Yoga Centre</td>
<td>0.51</td>
<td>0.58</td>
</tr>
<tr>
<td>e) Guest house</td>
<td>31.42</td>
<td>30.48</td>
</tr>
<tr>
<td>f) Fees</td>
<td>637.32</td>
<td>744.19</td>
</tr>
<tr>
<td>g) Hostel Rent &amp; other rent income</td>
<td>117.78</td>
<td>95.18</td>
</tr>
<tr>
<td>h) Water &amp; Electricity Charges</td>
<td>8.36</td>
<td>5.49</td>
</tr>
<tr>
<td>i) License Fees</td>
<td>13.00</td>
<td>9.01</td>
</tr>
<tr>
<td>j) NHS</td>
<td>0.60</td>
<td>1.95</td>
</tr>
<tr>
<td>k) DP &amp; NR</td>
<td>14.43</td>
<td>9.67</td>
</tr>
<tr>
<td>l) Convention Centre Advances and Income</td>
<td>155.97</td>
<td>200.72</td>
</tr>
<tr>
<td>m) Fruits and Nuts sales</td>
<td>2.96</td>
<td>0.48</td>
</tr>
<tr>
<td>n) Sale of Publications and Tender forms</td>
<td>19.20</td>
<td>15.05</td>
</tr>
</tbody>
</table>

### VI. Other Income & Receipts

<table>
<thead>
<tr>
<th>Category</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Interest receivables</td>
<td>1,639.83</td>
<td>1,104.56</td>
</tr>
<tr>
<td>b) Sundry Debtors and Income Tax refunds</td>
<td>131.02</td>
<td>47.26</td>
</tr>
<tr>
<td>c) Investments</td>
<td>45,514.71</td>
<td>52,611.97</td>
</tr>
<tr>
<td>d) LC Margin money receipts</td>
<td>7,771.97</td>
<td>2,895.98</td>
</tr>
<tr>
<td>e) EMD/CMD/SD receipts</td>
<td>820.64</td>
<td>268.80</td>
</tr>
<tr>
<td>f) GPF Fund receipts</td>
<td>3,013.42</td>
<td>2,445.08</td>
</tr>
<tr>
<td>g) Group Insurance Settlement receipts</td>
<td>38.61</td>
<td>45.18</td>
</tr>
<tr>
<td>h) Other Recoveries</td>
<td>0.62</td>
<td>3.76</td>
</tr>
</tbody>
</table>

### VII. Closing Balances

<table>
<thead>
<tr>
<th>Category</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Cash in hand</td>
<td>4.62</td>
<td>3.87</td>
</tr>
<tr>
<td>b) Bank Balances in Savings accounts</td>
<td>8,206.42</td>
<td>1,590.60</td>
</tr>
</tbody>
</table>

**TOTAL**

<table>
<thead>
<tr>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,10,108.98</td>
<td>1,05,389.31</td>
</tr>
</tbody>
</table>

-Sd-  
Deputy Financial Advisor &  
Chief Accounts Officer  

-Sd-  
REGISTRAR  

-Sd-  
DIRECTOR
SCHEDULE FORMING PART OF BALANCE SHEET AS AT 31st MARCH 2017

SCHEDULE - 1 - CORPUS / CAPITAL FUND

<table>
<thead>
<tr>
<th>PARTICULARS</th>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance as at the beginning of the year</td>
<td>36,552.35</td>
<td>28,475.80</td>
</tr>
<tr>
<td>Add: Plan Capital Grants received during the year</td>
<td>6,319.20</td>
<td>7,900.00</td>
</tr>
<tr>
<td>Add: Capital Grants De-Addiction centre received during the year</td>
<td>20.00</td>
<td>100.00</td>
</tr>
<tr>
<td></td>
<td>42,891.55</td>
<td>36,475.80</td>
</tr>
<tr>
<td>Less: Balance of net expenditure transferred from the Income and Expenditure Account</td>
<td>(13,670.12)</td>
<td>76.55</td>
</tr>
<tr>
<td>TOTAL</td>
<td>29,221.43</td>
<td>36,552.35</td>
</tr>
</tbody>
</table>

GRANTS FOR PROJECTS / SEMINARS / SYMPOSIUMS / WORKSHOPS / CSIR FELLOWSHIPS FOR THE YEAR 2016-17

SCHEDULE - 2

<table>
<thead>
<tr>
<th>PARTICULARS</th>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance of grants brought forward from previous year</td>
<td>2,997.92</td>
<td>1,248.87</td>
</tr>
<tr>
<td>Grants received during the year</td>
<td>4,923.27</td>
<td>4,076.18</td>
</tr>
<tr>
<td>TOTAL</td>
<td>7,921.19</td>
<td>5,325.05</td>
</tr>
<tr>
<td>Less: Expenditure incurred during the year</td>
<td>(2,622.27)</td>
<td>(2,439.12)</td>
</tr>
<tr>
<td>Add: Project Payables/ (receivables)</td>
<td>(674.01)</td>
<td>111.99</td>
</tr>
<tr>
<td>TOTAL</td>
<td>4,624.91</td>
<td>2,997.92</td>
</tr>
</tbody>
</table>

-Sd-
Deputy Financial Advisor & Chief Accounts Officer
### SCHEDULE FORMING PART OF BALANCE SHEET AS AT 31ST MARCH 2017

**SCHEDULE - 3 - EARMARKED / ENDOWMENT FUNDS**

<table>
<thead>
<tr>
<th>PARTICULARS</th>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>a) Opening Balance of the Funds</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>b) Additions to the Funds:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) Donations / Grants</td>
<td>20,772.60</td>
<td>4,598.13</td>
</tr>
<tr>
<td>ii) Income from Investments made on account of funds</td>
<td>2,575.30</td>
<td>2,076.09</td>
</tr>
<tr>
<td>iii) Other additions</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td><strong>Total (a+b)</strong></td>
<td>71,232.14</td>
<td>50,806.11</td>
</tr>
<tr>
<td><strong>c) Utilisation / Expenditure towards objectives of funds</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) Capital Expenditure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii) Revenue Expenditure</td>
<td>5,009.14</td>
<td>2,921.87</td>
</tr>
<tr>
<td><strong>NET BALANCE AS AT THE YEAR END</strong></td>
<td>66,223.00</td>
<td>47,884.24</td>
</tr>
</tbody>
</table>

Note: Interest income does not include interest from SB Accounts.

-Sd-
Deputy Financial Advisor & Chief Accounts Officer
## NATIONAL INSTITUTE OF MENTAL HEALTH & NEURO SCIENCES, BENGALURU

### SCHEDULE FORMING PART OF BALANCE SHEET AS AT 31ST MARCH 2017

#### SCHEDULE - 3 - EARMARKED / ENDOWMENT FUNDS

(Figures in Rs.)

<table>
<thead>
<tr>
<th>PARTICULARS</th>
<th>Balance as on 01-04-2016</th>
<th>Receipts</th>
<th>Total</th>
<th>Payments</th>
<th>Balance as on 31-03-2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grants/ Donations</strong></td>
<td></td>
<td><strong>Interest</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bharani Jaya Vijayam Research Endowment Fund</td>
<td>7,51,030</td>
<td>-</td>
<td>45,045</td>
<td>7,96,075</td>
<td>7,96,075</td>
</tr>
<tr>
<td>Brain Cancer Research Fund</td>
<td>791</td>
<td>-</td>
<td>-</td>
<td>791</td>
<td>791</td>
</tr>
<tr>
<td>C V Vishalakshminna Endowment Schizophrenia Research Fund</td>
<td>5,00,000</td>
<td>-</td>
<td>-</td>
<td>5,00,000</td>
<td>5,00,000</td>
</tr>
<tr>
<td>C.M's Relief Fund</td>
<td>(23,36,182)</td>
<td>73,00,000</td>
<td>-</td>
<td>49,63,818</td>
<td>3,69,606</td>
</tr>
<tr>
<td>Child Psychiatry Unit</td>
<td>7,39,371</td>
<td>14,500</td>
<td>-</td>
<td>7,53,871</td>
<td>36,475</td>
</tr>
<tr>
<td>Corpus Fund (DP&amp;NR)</td>
<td>60,24,562</td>
<td>-</td>
<td>2,71,445</td>
<td>62,96,007</td>
<td>-</td>
</tr>
<tr>
<td>Corpus Fund for Development Works</td>
<td>1,09,97,01,170</td>
<td>-</td>
<td>7,86,87,033</td>
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<td>1,45,366</td>
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<td>Dr. D.N. Prasad M.F. - Cognition and Music</td>
<td>10,82,922</td>
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<td>11,57,922</td>
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<td>27,822</td>
<td>4,43,775</td>
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**Carried Forward Amount**

<p>| Total | 1,56,85,45,663 | 21,81,88,454 | 9,03,97,144 | 1,87,71,31,261 | 12,52,66,166 | 1,75,18,65,095 |</p>
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<th>9,03,97,144</th>
<th>1,87,71,31,261</th>
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<td>-</td>
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<td>Parkinson's Disease and Movement Disorders R.F</td>
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<td>-</td>
<td>25,65,865</td>
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<td>Pension &amp; Gratuity Fund</td>
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<td>2,74,747</td>
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<td>Rabies Diagnostic Services - Dept. of Neurovirology</td>
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<td>2,52,411</td>
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<td>3,42,4</td>
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**TOTAL** | **4,78,84,23,108** | **2,07,72,60,311** | **25,75,29,395** | **7,12,32,12,814** | **50,09,13,902** | **6,62,22,98,912**

-Sd-
Deputy Financial Advisor & Chief Accounts Officer
### Schedule Forming Part of Balance Sheet as at 31st March 2017

#### SCHEDULE - 4 - CURRENT LIABILITIES AND PROVISIONS

(Rs. In Lakh)

<table>
<thead>
<tr>
<th>PARTICULARS</th>
<th>2016-17</th>
<th>2015-16</th>
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<td><strong>A. CURRENT LIABILITIES</strong></td>
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<td>1. Sundry Creditors &amp; Deposits:</td>
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<td>a) EMD, SD, CMD</td>
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<td>b) Trade Payables &amp; others</td>
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<tr>
<td>2. Statutory Liabilities:</td>
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<tr>
<td>a) Overdue</td>
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<td>b) Others</td>
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<td>3. Other Current Liabilities</td>
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<td><strong>B. PROVISIONS</strong></td>
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<td><strong>TOTAL (B)</strong></td>
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<tr>
<td><strong>TOTAL (A+B)</strong></td>
<td>6,331.87</td>
<td>4,154.94</td>
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-Sd-
Deputy Financial Advisor & Chief Accounts Officer
## SCHEDULE 5: FIXED ASSETS

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<th>PARTICULARS</th>
<th>Gross Block as at 01-04-2016</th>
<th>Additions during the year</th>
<th>Deductions during the year</th>
<th>Total Assets as at 31-03-2017</th>
<th>Rate of depreciation (%)</th>
<th>Accumulated Depreciation Upto 31-03-2016</th>
<th>Depreciation for the year 2016-17</th>
<th>Total Depreciation Upto 31-03-2017</th>
<th>Net Block as at 31-03-2017</th>
<th>Net Block as at 31-03-2016</th>
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<tr>
<td>Equipment</td>
<td>2,837.04</td>
<td>86.04</td>
<td>-</td>
<td>2,923.08</td>
<td>10.00</td>
<td>1,839.38</td>
<td>1,839.38</td>
<td>1,083.70</td>
<td>2,837.04</td>
<td>2,837.04</td>
</tr>
<tr>
<td>Computers</td>
<td>177.59</td>
<td>56.61</td>
<td>-</td>
<td>234.20</td>
<td>25.00</td>
<td>178.97</td>
<td>178.97</td>
<td>55.23</td>
<td>177.59</td>
<td>177.59</td>
</tr>
<tr>
<td>Furniture &amp; fixtures</td>
<td>32.91</td>
<td>0.35</td>
<td>-</td>
<td>33.26</td>
<td>10.00</td>
<td>22.44</td>
<td>22.44</td>
<td>10.82</td>
<td>32.91</td>
<td>32.91</td>
</tr>
<tr>
<td>Software</td>
<td>3.60</td>
<td>0.98</td>
<td>-</td>
<td>4.58</td>
<td>25.00</td>
<td>3.62</td>
<td>3.62</td>
<td>3.62</td>
<td>3.60</td>
<td>3.60</td>
</tr>
<tr>
<td>Library Books</td>
<td>0.79</td>
<td>7.20</td>
<td>-</td>
<td>7.99</td>
<td>50.00</td>
<td>4.39</td>
<td>4.39</td>
<td>3.60</td>
<td>0.79</td>
<td>0.79</td>
</tr>
<tr>
<td><strong>SUB-TOTAL (B)</strong></td>
<td>3,051.93</td>
<td>151.18</td>
<td>-</td>
<td>3,203.11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3,051.93</td>
<td>3,051.93</td>
</tr>
<tr>
<td><strong>GRAND TOTAL (A+B)</strong></td>
<td>67,372.91</td>
<td>4,872.86</td>
<td>-</td>
<td>72,245.77</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>39,090.60</td>
<td>38,343.55</td>
</tr>
</tbody>
</table>

Note: Depreciation of Rs. 11.87 lakhs claimed and charged in advance during 2015-16 on Equipments, has been reversed and depreciation has been reworked accordingly.

-Sd-
Deputy Financial Advisor & Chief Accounts Officer
### Schedule Forming Part of Balance Sheet as at 31st March 2017

**Schedule - 6 - Investments from Earmarked / Endowment Funds**

<table>
<thead>
<tr>
<th>PARTICULARS</th>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. In Government Securities</td>
<td>12,545.68</td>
<td>5,388.42</td>
</tr>
<tr>
<td>2. In Public Sector Banks</td>
<td>19,855.75</td>
<td>20,634.18</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>32,401.43</strong></td>
<td><strong>26,022.60</strong></td>
</tr>
</tbody>
</table>

**Schedule - 7 - Investment - Others**

<table>
<thead>
<tr>
<th>PARTICULARS</th>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Investments in Public Sector Banks and Bonds</td>
<td>11,783.94</td>
<td>10,442.19</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>11,783.94</strong></td>
<td><strong>10,442.19</strong></td>
</tr>
</tbody>
</table>

-Sd-
Deputy Financial Advisor & Chief Accounts Officer
### SCHEDULE FORMING PART OF BALANCE SHEET AS AT 31ST MARCH 2017

**SCHEDULE - 8 - CURRENT ASSETS, LOANS, ADVANCES, ETC.,**

<table>
<thead>
<tr>
<th>PARTICULARS</th>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. CURRENT ASSETS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Inventories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Stock of Consumables (Hospital &amp; Others)</td>
<td>664.44</td>
<td>473.01</td>
</tr>
<tr>
<td>b) Stationery on hand</td>
<td>11.60</td>
<td>676.04</td>
</tr>
<tr>
<td>2. Sundry Debtors</td>
<td>164.17</td>
<td>260.56</td>
</tr>
<tr>
<td>3. Cash Balances in hand (Including cheques / drafts and imprest)</td>
<td>4.62</td>
<td>3.87</td>
</tr>
<tr>
<td>4. Bank Balances</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- With Scheduled Banks</td>
<td>8,206.42</td>
<td>8,375.21</td>
</tr>
<tr>
<td><strong>TOTAL (A)</strong></td>
<td><strong>9,051.25</strong></td>
<td><strong>2,345.16</strong></td>
</tr>
<tr>
<td><strong>B. LOANS, ADVANCES AND OTHER ASSETS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Loans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Staff</td>
<td>83.28</td>
<td>24.36</td>
</tr>
<tr>
<td>b) Advance Receivables</td>
<td>331.21</td>
<td>404.98</td>
</tr>
<tr>
<td>c) Prepaid Expenses</td>
<td>2.30</td>
<td>326.91</td>
</tr>
<tr>
<td>d) Tax Deducted at Source (recoverable)</td>
<td>119.68</td>
<td>96.76</td>
</tr>
<tr>
<td>e) Margin Money Deposits (LC) including opening charges</td>
<td>4,736.55</td>
<td>11,811.35</td>
</tr>
<tr>
<td>2. Advances to Suppliers</td>
<td>6,347.50</td>
<td>11,620.52</td>
</tr>
<tr>
<td>3. Advances &amp; Other amounts recoverable in cash or in kind</td>
<td></td>
<td></td>
</tr>
<tr>
<td>or for value to be received</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Contingencies and Purchases/suppliers/Projects Section</td>
<td>402.33</td>
<td>176.07</td>
</tr>
<tr>
<td>b) Due from Govt. of India</td>
<td>-</td>
<td>1,049.79</td>
</tr>
<tr>
<td>c) Deposits</td>
<td>140.09</td>
<td>121.14</td>
</tr>
<tr>
<td>d) Receivable from General Provident Fund</td>
<td>209.40</td>
<td>243.91</td>
</tr>
<tr>
<td>4. Interest Receivable</td>
<td>2,855.96</td>
<td>3,607.78</td>
</tr>
<tr>
<td><strong>TOTAL (B)</strong></td>
<td><strong>15,228.30</strong></td>
<td><strong>17,487.88</strong></td>
</tr>
<tr>
<td><strong>TOTAL (A+B)</strong></td>
<td><strong>24,279.55</strong></td>
<td><strong>19,833.04</strong></td>
</tr>
</tbody>
</table>

-Sd-
Deputy Financial Advisor & Chief Accounts Officer
## Schedules Forming Part of Income & Expenditure

**For the Year Ended 31st March 2017**

### Schedule - 9 - Income from Sales / Services

(Rs. In Lakh)

<table>
<thead>
<tr>
<th>PARTICULARS</th>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Income from Sales - DP &amp; NR</td>
<td>28.07</td>
<td>27.19</td>
</tr>
<tr>
<td>2. Income from Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) Hospital Services</td>
<td>3,190.76</td>
<td>3,008.25</td>
</tr>
<tr>
<td>ii) Yoga Center</td>
<td>0.51</td>
<td>0.58</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>3,219.34</td>
<td>3,036.02</td>
</tr>
</tbody>
</table>

### Schedule - 10 - Grants / Subsidies (Irrevocable Grants & Subsidies Received)

(Rs. In Lakh)

<table>
<thead>
<tr>
<th>PARTICULARS</th>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Central Government</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) Plan</td>
<td>8,030.00</td>
<td>7,000.00</td>
</tr>
<tr>
<td>ii) Non-Plan</td>
<td>15,900.00</td>
<td>13,500.00</td>
</tr>
<tr>
<td>iii) De-Addiction</td>
<td>650.00</td>
<td>550.00</td>
</tr>
<tr>
<td>2. State Government</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) Plan</td>
<td>555.00</td>
<td>400.00</td>
</tr>
<tr>
<td>ii) Non-Plan</td>
<td>5,489.00</td>
<td>5,100.00</td>
</tr>
<tr>
<td>iii) Capacity Building</td>
<td>-</td>
<td>6,044.00</td>
</tr>
<tr>
<td>3. ICMR Grants</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>210.34</td>
<td>210.34</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>30,834.34</td>
<td>26,833.12</td>
</tr>
</tbody>
</table>

- Sd-
  Deputy Financial Advisor & Chief Accounts Officer

NATIONAL INSTITUTE OF MENTAL HEALTH & NEURO SCIENCES, BENGALURU
Schedules Forming Part of Income & Expenditure
For the Year Ended 31st March 2017

Schedule - 11 - Fees / Subscriptions

<table>
<thead>
<tr>
<th>PARTICULARS</th>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Fees (Academic Section)</td>
<td>580.80</td>
<td>685.60</td>
</tr>
<tr>
<td>TOTAL</td>
<td>580.80</td>
<td>685.60</td>
</tr>
</tbody>
</table>

Schedule - 12 - Income from Government Securities/Bonds

<table>
<thead>
<tr>
<th>PARTICULARS</th>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Interest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) On Govt. Securities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Other Bonds / Debentures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

-Sd-
Deputy Financial Advisor & Chief Accounts Officer
### SCHEDULE - 13 - INCOME FROM INVESTMENTS

(Rs. In Lakh)

<table>
<thead>
<tr>
<th>PARTICULARS</th>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. On Bank Account including FDRs:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) With Scheduled Banks</td>
<td>1,507.73</td>
<td>1,168.81</td>
</tr>
<tr>
<td>b) Accrued Interest (SB &amp; FD)</td>
<td>122.14</td>
<td>1,629.87</td>
</tr>
<tr>
<td>2. On Loans:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Employees / Staff - HBA</td>
<td>0.01</td>
<td>0.45</td>
</tr>
<tr>
<td>b) Others - MCA</td>
<td>0.13</td>
<td>0.14</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1,630.01</strong></td>
<td><strong>1,635.83</strong></td>
</tr>
</tbody>
</table>

### SCHEDULE - 14 - OTHER INCOME

(Rs. In Lakh)

<table>
<thead>
<tr>
<th>PARTICULARS</th>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Fees for Miscellaneous Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Water &amp; Electricity Charges</td>
<td>31.06</td>
<td>28.42</td>
</tr>
<tr>
<td>b) NHS</td>
<td>64.39</td>
<td>95.45</td>
</tr>
<tr>
<td>2. Miscellaneous Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Miscellaneous Receipts</td>
<td>88.58</td>
<td>299.27</td>
</tr>
<tr>
<td>b) Convention Centre</td>
<td>142.55</td>
<td>160.79</td>
</tr>
<tr>
<td>c) Project Overhead</td>
<td>175.27</td>
<td>73.84</td>
</tr>
<tr>
<td>d) Donation</td>
<td>27.57</td>
<td>5.72</td>
</tr>
<tr>
<td>e) Hostel Rent</td>
<td>252.32</td>
<td>227.12</td>
</tr>
<tr>
<td>f) Tender Forms and Publications</td>
<td>19.29</td>
<td>705.58</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>801.03</strong></td>
<td><strong>873.22</strong></td>
</tr>
</tbody>
</table>

-Sd-
Deputy Financial Advisor & Chief Accounts Officer
### SCHEDULE - 15 - ESTABLISHMENT EXPENSES

(Rs. In Lakh)

<table>
<thead>
<tr>
<th>PARTICULARS</th>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Salaries &amp; Wages</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Non-Plan</td>
<td>9,768.15</td>
<td>7,483.46</td>
</tr>
<tr>
<td>(b) Plan</td>
<td>6,519.19</td>
<td>5,654.58</td>
</tr>
<tr>
<td>(c) Wages</td>
<td>362.17</td>
<td>16,649.51</td>
</tr>
<tr>
<td>2. Stipend and Residential benefits</td>
<td>2,901.01</td>
<td>2,509.14</td>
</tr>
<tr>
<td>3. Contribution to Other Fund (LS &amp; PC)</td>
<td>13.79</td>
<td>6.60</td>
</tr>
<tr>
<td>4. Contribution to Pension Fund</td>
<td>18,130.52</td>
<td>-</td>
</tr>
<tr>
<td>5. Medical Treatment</td>
<td>606.68</td>
<td>21,652.00</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>38,301.51</strong></td>
<td><strong>16,422.22</strong></td>
</tr>
</tbody>
</table>

-Sd-
Deputy Financial Advisor & Chief Accounts Officer
### Schedule - 16 - Other Administrative Expenses, etc.,

<table>
<thead>
<tr>
<th>PARTICULARS</th>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Drugs</td>
<td>671.52</td>
<td>760.22</td>
</tr>
<tr>
<td>2 Diet Expenses</td>
<td>114.61</td>
<td>122.30</td>
</tr>
<tr>
<td>3 HNS</td>
<td>413.76</td>
<td>325.94</td>
</tr>
<tr>
<td>4 Linen</td>
<td>108.77</td>
<td>71.99</td>
</tr>
<tr>
<td>5 Gas &amp; Oxygen</td>
<td>48.47</td>
<td>46.30</td>
</tr>
<tr>
<td>6 Chemicals</td>
<td>24.25</td>
<td>39.50</td>
</tr>
<tr>
<td>7 Animal House</td>
<td>11.43</td>
<td>11.52</td>
</tr>
<tr>
<td>8 Liveries</td>
<td>12.18</td>
<td>4.70</td>
</tr>
<tr>
<td>9 Lab Equipments &amp; Apparatus</td>
<td>10.04</td>
<td>5.96</td>
</tr>
<tr>
<td>10 Electricity Charges</td>
<td>723.97</td>
<td>692.68</td>
</tr>
<tr>
<td>11 Water Charges</td>
<td>513.82</td>
<td>546.77</td>
</tr>
<tr>
<td>12 Repairs &amp; Maintenance (Buildings, Garden &amp; BME)</td>
<td>688.28</td>
<td>896.33</td>
</tr>
<tr>
<td>13 Rent, Rates and Taxes</td>
<td>22.92</td>
<td>12.09</td>
</tr>
<tr>
<td>14 Vehicles Running and Maintenance</td>
<td>32.03</td>
<td>29.53</td>
</tr>
<tr>
<td>15 Postage, Telephone and Communication Charges</td>
<td>46.93</td>
<td>55.95</td>
</tr>
<tr>
<td>16 Printing and Stationary</td>
<td>55.79</td>
<td>55.57</td>
</tr>
<tr>
<td>17 Travelling and Conveyance Expenses</td>
<td>178.53</td>
<td>149.53</td>
</tr>
<tr>
<td>18 Hospital Contingencies</td>
<td>2.19</td>
<td>0.99</td>
</tr>
<tr>
<td>19 Security and Cleaning</td>
<td>1,768.56</td>
<td>1,461.17</td>
</tr>
<tr>
<td>20 Miscellaneous Expenses</td>
<td>67.30</td>
<td>66.23</td>
</tr>
<tr>
<td>21 Office Contingencies</td>
<td>80.81</td>
<td>84.92</td>
</tr>
<tr>
<td>22 DP &amp; NR</td>
<td>23.48</td>
<td>20.35</td>
</tr>
<tr>
<td>23 Equipment Contingencies</td>
<td>982.60</td>
<td>1,161.97</td>
</tr>
<tr>
<td>No.</td>
<td>Description</td>
<td>2016-17</td>
</tr>
<tr>
<td>-----</td>
<td>-----------------------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>24</td>
<td>Drug De-Addiction Centre</td>
<td>250.01</td>
</tr>
<tr>
<td>25</td>
<td>Convention Centre</td>
<td>24.23</td>
</tr>
<tr>
<td>26</td>
<td>National Mental Health Survey</td>
<td>72.95</td>
</tr>
<tr>
<td>27</td>
<td>National Mental Health Survey - Prior Period Expenses (2014-15)</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Corpus Fund for Developmental Works</td>
<td>-</td>
</tr>
<tr>
<td>29</td>
<td>Fuel to Generator</td>
<td>37.27</td>
</tr>
<tr>
<td>30</td>
<td>Books &amp; Periodicals &amp; E-Journals and Database</td>
<td>88.47</td>
</tr>
<tr>
<td>31</td>
<td>Information Technology</td>
<td>32.60</td>
</tr>
<tr>
<td>32</td>
<td>Furniture &amp; Fixture - Maintenance</td>
<td>4.45</td>
</tr>
<tr>
<td>33</td>
<td>Research and Development</td>
<td>169.79</td>
</tr>
<tr>
<td>34</td>
<td>Professional Charges &amp; Consultancy</td>
<td>18.58</td>
</tr>
<tr>
<td>35</td>
<td>Centre for Public health</td>
<td>2.01</td>
</tr>
<tr>
<td>36</td>
<td>Advertisement</td>
<td>27.01</td>
</tr>
<tr>
<td>37</td>
<td>Interventional Implants</td>
<td>170.31</td>
</tr>
<tr>
<td>38</td>
<td>Yoga Centre</td>
<td>11.32</td>
</tr>
<tr>
<td>39</td>
<td>Brain Bank</td>
<td>17.74</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td><strong>7,528.98</strong></td>
</tr>
</tbody>
</table>

-Sd-
Deputy Financial Advisor & Chief Accounts Officer
SCHEDULE-17–SIGNIFICANT ACCOUNTING POLICIES

1. SYSTEM AND METHOD OF ACCOUNTING:
The accounts have been prepared under the Historical Cost Convention with Accrual system of accounting.

2. The Provident Fund established for the benefits of the employees of NIMHANS, Bangalore has been recognized under Sub-Section (2) of Sec. 8 of the Provident Funds Act, 1925 (19 of 1925) by the Govt. of India, Ministry of Finance vide Notification No. 4 (1)-E.V. 192 (I), dated 24th December 1992.

3. FIXED ASSETS:
Fixed assets are accounted at Historical cost of acquisition including inward freight, duties & taxes and incidental and direct expenses related to acquisition, installation and commissioning.

Fixed assets have been valued at cost less accumulated depreciation. Depreciation on Fixed assets is provided on Straight Line Method at the following Rates.

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Percentage of Depreciation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land</td>
<td>0%</td>
</tr>
<tr>
<td>Buildings</td>
<td>5%</td>
</tr>
<tr>
<td>Equipment, Office Equipment, Electrical</td>
<td>10%</td>
</tr>
<tr>
<td>Installations and Vehicles</td>
<td></td>
</tr>
<tr>
<td>Computers, Peripherals and Software</td>
<td>25%</td>
</tr>
<tr>
<td>Library Books, E-Journals and Database with Perpetual License</td>
<td>50%</td>
</tr>
</tbody>
</table>

Depreciation is provided for the full year on addition of assets acquired during the year. Assets acquired from the Earmarked Funds, where the ownership of such assets vests with the Institute, are included as the Fixed Assets of the Institute.

Assets acquired from project funds are treated as project assets and depreciation has been claimed on such assets. Further, depreciation on project assets for earlier years has also been recognized during the year and the impact of such depreciation has been presented as “Project Asset Reserves”.

Fixed Assets which were acquired prior to the cut-off-date, as tabulated below, are fully depreciated.

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Cut-Off-Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buildings</td>
<td>31/03/1996</td>
</tr>
<tr>
<td>Equipment &amp; Tolls, Furniture and Vehicles</td>
<td>31/03/2006</td>
</tr>
<tr>
<td>Computers, Accessories and Software</td>
<td>31/03/2012</td>
</tr>
<tr>
<td>Library Books, Journals &amp; Database with Perpetual License</td>
<td>31/03/2014</td>
</tr>
</tbody>
</table>

4. INVENTORY:
Stock of Drugs, Chemicals, Linen, Stationery and other Stores were taken at cost as per the Physical verification and Certificates issued by Departmental Heads as on 31/03/2017.

5. INVESTMENTS:
All Investments are valued at cost.

6. GOVERNMENT GRANTS:
Grants received from Government of India and Government of Karnataka under Plan (General) and Non-Plan are treated as Revenue unless they are Capital Grants. Plan Grants (Capital) were utilized in acquiring Fixed Assets and are directly accounted under Capital Fund Account-Schedule 1.

7. INVESTMENT OF EARMARKED/ENDOWMENT FUNDS AND INTEREST ACCRUED ON SUCH INVESTMENTS:
Incomes earned on various Investments including Earmarked Investments have been recognized on accrual basis subject to materiality. Interest received on maturity are credited to the concerned fund account. Interest accrued on Earmarked/Endowment Fund are disclosed under ‘Interest Receivables’.

8. Figures of earlier year have been re-grouped to make comparable with the figures of the current year, wherever necessary.

9. **TAXATION:**
The Institute is not liable to Income Tax as it is exempt under Sec. 10(23)(c)(iiiab) & 10(23)(c)(iiiac) of the Income Tax Act, 1961, hence no provision has been made towards taxes.

-Sd-
Deputy Financial Advisor &
Chief Accounts Officer

-Sd-
DIRECTOR
SCHEDULES FORMING PART OF THE ACCOUNTS
FOR THE PERIOD ENDED 31ST MARCH 2017

SCHEDULE-18 – NOTES ON ACCOUNTS FORMING PART OF
INCOME AND EXPENDITURE ACCOUNT AND BALANCE SHEET

1. The Annual Accounts for the year 2016-17 is prepared on Accrual basis.

2. Liabilities are recognized and considered on receipt of bill of materials/ equipment both in respect of Current and Other Liabilities.

3. In respect of NIMHANS HEALTH SCHEME, for Ex-employees of the Institute, the liability towards health care facility to be provided cannot be quantified and therefore no provision has been made towards it.

4. Current assets, Loans and Advances have a realizable value in the ordinary course of business, equal to the aggregate amount shown in the Balance Sheet.

5. Schedules 1 to 18 are annexed to and form an integral part of the Balance sheet as at 31st March 2017 and the Income and Expenditure Account for the Year ended that date.

6. The Actuarial Valuation of pension liability and gratuity was carried out by a qualified actuary. The valuation certificate recommended a total service liability of Rs.478.08 crore on Pension and Gratuity. As against the total provision of Rs.478.08 crore carried on the liabilities side of the balance sheet, the Fund Deposits against this provision is only Rs.200.43 crore.

7. A provision of Rs. 49.31 crore has been made towards leave encashment as per the actuarial valuation but no fund deposit has been created by the Institute towards this.

8. (i) Land (145 acres and 4480Sq.ft.) was allotted free of cost by Government of Karnataka in the past. The land value (Rs. 71.71 lakh) shown under ‘Schedule 5- Fixed Assets’ represents incidental expenditure incurred in connection with acquisition.

   (ii) During the year 2012-13 NIMHANS has been allotted Land to the extent of 39 Acres and 38 Guntas at Kyalasanahalli, Bangalore, (30 Acres 38 Guntas is in possession and 9 Acres is in the process of transfer of possession) by Government of Karnataka on lease basis. Four installments of the lease amount of Rs. 3 Crore (Fixed) for 30 years, payable @ Rs.50.00 lakh per year at 6 yearly installments, has been paid so far.

9. An Amount of Rs. 858.90 Lakhs has been received during the financial year 2016-17 as foreign contributions and accounted under FF A/c No.:54004656310.

-Sd-
Deputy Financial Advisor &
Chief Accounts Officer

-Sd-
DIRECTOR
01 We have audited the attached Balance Sheet of the National Institute of Mental Health and Neuro Sciences (NIMHANS) Bengaluru as at 31 March 2017 and the Income & Expenditure Account / Receipt & Payment Account for the year ended on that date under Section 20(1) of the Comptroller and Auditor General's (Duties, Powers and Conditions of Service) Act, 1971. The audit has been entrusted for five years from 2015-16 to 2019-20. These financial statements are the responsibility of the Institute's management. Our responsibility is to express an opinion on these financial statements based on our audit.

02 This Separate Audit Report contains the comments of the Comptroller and Auditor General of India (CAG) on the accounting treatment only with regard to classification, conformity with the best accounting practices, accounting standards and disclosure norms, etc. Audit observations on financial transactions with regard to compliance with the Law, Rules and Regulations (Propriety and Regularity) and efficiency-cum-performance aspects etc., if any, are reported through Inspection Reports / CAG's Audit Reports separately.

03 We have conducted our audit in accordance with auditing standards generally accepted in India. These standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material mis-statements. An audit includes examining on a test basis, evidences supporting the amounts and disclosure in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of financial statements. We believe that our audit provides a reasonable basis for our opinion.

04 Based on our Audit, we report that:

i. We have obtained all the information and explanations, which to the best of our knowledge and belief were necessary for the purpose of our audit.

ii. The Balance Sheet and Income & Expenditure Account / Receipt & Payment Account dealt with by this report have been drawn up in the format approved by the Institute's Board of Management and Finance Committee.

iii. In our opinion, proper books of accounts and other relevant records have been maintained by the Institute in so far as it appears from our examination of such books.

iv. We further report that:
GRANTS-IN-AID

The financial position of Institute of Mental Health and Neuro Sciences, Bengaluru for the year 2016-17 is as under:

(Rs. in crore)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Type of Fund</th>
<th>Plan</th>
<th>Non-Plan</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Government of India</td>
<td>80.30</td>
<td>159.00</td>
<td>239.30</td>
</tr>
<tr>
<td>2</td>
<td>Government of Karnataka</td>
<td>5.55</td>
<td>54.89</td>
<td>60.44</td>
</tr>
<tr>
<td>3</td>
<td>De-Addiction Centre (Grants)</td>
<td>6.50</td>
<td>-</td>
<td>6.50</td>
</tr>
<tr>
<td>4</td>
<td>ICMR Grants</td>
<td>-</td>
<td>2.10</td>
<td>2.10</td>
</tr>
<tr>
<td>5</td>
<td>Utilization</td>
<td>92.35</td>
<td>215.99</td>
<td>308.34</td>
</tr>
</tbody>
</table>

Factual and the grants received were fully utilized for the purpose for which they were sanctioned.

REVISION OF ACCOUNTS

B The Institute revised its accounts based on audit observation and submitted the “revised accounts” on 21st August 2017. The effect of revision was that, excess of expenditure over income decreased by Rs.1084.46 lakh and assets and liabilities increased by Rs.68 lakh.

C COMMENTS ON ACCOUNTS

1 Assets-Schedule 5

During the year, an addition of Rs. 1713.28 lakh was made to assets, being the expenditure towards capital repairs to building works and depreciated at the rate of five percent on Straight Line Method, without considering the remaining useful life of buildings. Further, due to non-maintenance of Consolidated Fixed Asset register, the details of buildings to which these repairs were made could not be ascertained in audit.

NIMHANS though do not have the consolidated Fixed Asset Register, yet department wise Asset Register is maintained on day to day basis. However, efforts would be made to consolidate and update the same and necessary depreciation would be assessed and provided during the year 2017-18.

2 Current Assets, Loans and Advances etc.-Schedule 8

2.1 Medical Bill Claims for Rs. 13.03 lakh were disallowed by various organisations such as ESI, etc., but no provision was created in the books of accounts leading to “overstatement of debtors and understatement of provision besides understatement of excess of expenditure over income” to that extent.

ESI, being a government organization was availing our Hospital facilities and there was a recovery amount of 13.03 lakh pending, however they were asked to pay the amount in full and they may settle the full amount.

2.2 For the Assessment Year 2016-17 (FY 2015-16), as against refund of Rs. 31.57 lakh receivable towards TDS from IT Department, claim was prepared only for Rs. 29.82 lakh (as per the IT return filed). This has resulted in overstatement of current assets and understatement of excess of expenditure over income by Rs. 1.75 lakh due to non-reconciliation.

The Institute has claimed refund of Rs.29.82 lakh as per Form 26AS of the Income Tax, The TDS amount of Rs.31.57 lakh reflected in the Annual Accounts, is the actual TDS deducted from the respective parties. Reconciliation will be done between the 26AS and TDS as per Annual Accounts and efforts will be made to recover the amount from either the party or the Income Tax department on case to case basis.
2.3 The advance payment of Rs. 114.80 lakh made to Pica Medical Pvt Ltd. for the supply of neuro endoscope and Rs. 39.23 lakh being the advance made to M/s Wipro GE Healthcare Pvt. Ltd. for the supply of E-Anesthesia charting solutions remained unadjusted even after receipt, installation and utilization of the said equipments. Thus, non-adjustment of advances made to the suppliers resulted in overstatement of advances and understatement of assets by Rs. 154.03 lakh and understatement of depreciation and excess of expenditure over income by Rs. 15.40 lakh.

The Neuro Endoscopy system was supplied by Pika Medical Pvt. Ltd. Although the ER was prepared on 31.03.2017, the department has not certified its use and has not taken the equipment in to stock till date due to technical reasons. In the absence of which the bill for the same could not be adjusted and further capitalized.

E-Anesthesia Charting Solutions was supplied by Wipro GE Healthcare Pvt. Ltd. for an amount of Rs. 39.23 Lakh. Although the equipment was supplied and installed in December 2016, the end user and the firm responsible for the supply did not confirm that all the necessary accessories were supplied for the full functional operation of this equipment and there was a difference between the purchase order issued and invoice given. The same has been certified by the firm on 15.06.2017, after which the ER was prepared on 16.06.2017 and the stock was taken by the department. In view of the above process the equipment was capitalized in the financial year 2017-18.

D INCOME AND EXPENDITURE ACCOUNT

The interest of Rs. 26.04 lakh (considering 4% rate of interest on Rs. 651.09 lakh.) earned on savings bank accounts (on various funds received for different purposes) was considered as income of the Institute instead of crediting to the respective funds. Treating the interest earned on fund balance as income of the Institute resulted in overstatement of income and understatement of liability by Rs. 26.04 lakh.

The funds balances apart from the invested amount will be retained in the savings bank account, since these funds will be operational and their balances will keep on changing on daily basis, sometimes in the nature of Advances as well. Tracking these fund balances and appropriating the Interest on SB Account to the respective fund would be a quite a difficult task. However, in future a mechanism would be devised so that the interest could be divided into the respective funds

E GENERAL

The Institute has not maintained a consolidated fixed asset register to ensure availability of complete and accurate details of the assets. Further, the assets (buildings, furnitures, computer equipments, etc.) are depreciated cent percent, without considering the useful life of the assets and without retaining any residual value in the books of accounts. As such, there is no control on the assets, which are depreciated fully but in use.

The Assets Register is maintained in every department and it is controlled and depreciated as per rules. But there is no consolidated Fixed Asset Register. However, efforts will be made to have a consolidated Fixed Asset Register as desired by Audit in near future.

Sd/-

PRINCIPAL DIRECTOR OF AUDIT (CENTRAL)

Director, NIMHANS

Place: Bangalore
Date: 11th October 2017
ANNEXURE

Adequacy of Internal Audit System

Internal Audit of the National Institute of Mental Health and Neuro Sciences covers all matters relating to local purchases, foreign purchases, rate contracts, labour contracts entered into by the institute, verification of utilization certificates and audit of all contingencies including security, housekeeping, hospital bills, claims etc.

Adequacy of internal control system

Internal control system is inadequate and needs strengthening, due to the following facts:

a. Institute is not maintaining Consolidated Asset Register indicating year wise breakup of the gross block of assets, depreciation provided up to date and the net block of assets.

b. The interest earned on earmarked fund balance retained in SB accounts was treated as income of the institute without crediting the same to the concerned funds.

c. The institute has not maintained the details of TDS recovered by the banks on the interest earned on deposits prior to 2014-15 resulting in non-settlement of refunds.

d. There was excess payment of Children Education Allowance.

e. The institute has not filed the service tax return for the second half of 2016-17.

System of Physical verification

Physical verification of inventory is conducted annually but the details of disposal of condemned items are not maintained.

Regularity in payment of statutory dues

The institute is generally regular in payment of its statutory dues.

Factual – No Remarks

a. Regarding consolidated Asset Register, Audit has already pointed out in Para 4.1 and 5.1. Necessary action would be taken in due course.

b. Audit also pointed this in Para 4.3 and some methodology would be adopted to credit the interest earned to Earmarked Funds for the balance retained in SB Accounts.

c. The Institute now maintains the details of TDS recovered by Bank and Interest earned on deposits.

d. The excess payment of Children Education allowance is being recovered.

e. The Service Tax is being filed by the Institute for the second half of 2016-17.

Physical verification of inventory is conducted annually and the details of disposal of condemned items are also maintained.

Factual - No Remarks

PRINCIPAL DIRECTOR OF AUDIT (CENTRAL)
BANGALORE

DIRECTOR, NIMHANS

Place: Bangalore
Date:11th October 2017
# PROVIDENT FUND ACCOUNT

**Balance Sheet as at 31st March 2017**

(Rs. In Lakh)

<table>
<thead>
<tr>
<th>CORPUS / CAPITAL FUND &amp; LIABILITIES</th>
<th>2016-17</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CAPITAL FUND</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opening Balance</td>
<td>5,570.57</td>
<td>5,512.44</td>
</tr>
<tr>
<td>Add: Contribution from employees</td>
<td>1,335.02</td>
<td>1,610.45</td>
</tr>
<tr>
<td>Add: Excess of Income over Expenditure</td>
<td>57.00</td>
<td>22.52</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>6,962.59</td>
<td>7,145.41</td>
</tr>
<tr>
<td>Less: Payments during the year</td>
<td>1,247.53</td>
<td>1,574.84</td>
</tr>
<tr>
<td><strong>Current Liabilities</strong></td>
<td>5,715.06</td>
<td>5,570.57</td>
</tr>
<tr>
<td>Payable to Institute</td>
<td>209.40</td>
<td>209.40</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>5,924.46</td>
<td>5,814.48</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ASSETS</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>INVESTMENTS - FROM EARMARKED / ENDOWMENT FUNDS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) In Government Securities</td>
<td>3,384.05</td>
<td>1,691.29</td>
</tr>
<tr>
<td>(b) In Public Sector Banks</td>
<td>1,612.89</td>
<td>2,943.77</td>
</tr>
<tr>
<td>(c) In RBI Special Deposits</td>
<td>414.09</td>
<td>5,049.15</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CURRENT ASSETS</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash at Canara Bank</td>
<td>161.89</td>
<td>283.70</td>
</tr>
<tr>
<td>Loan to Employees</td>
<td>205.14</td>
<td>285.68</td>
</tr>
<tr>
<td>Interest on Investments Receivables</td>
<td>146.40</td>
<td>765.33</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>5,924.46</td>
<td>5,814.48</td>
</tr>
</tbody>
</table>

-Sd-
Deputy Financial Advisor &
Chief Accounts Officer

-Sd-
REGISTRAR

-Sd-
DIRECTOR
## PROVIDENT FUND ACCOUNT

### INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH 2017

<table>
<thead>
<tr>
<th></th>
<th>2016-17 (Rs. In Lakh)</th>
<th>2015-16 (Rs. In Lakh)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INCOME</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest Earned on Investments</td>
<td>308.14</td>
<td>235.21</td>
</tr>
<tr>
<td>Accrued Interest Earned on Investments</td>
<td>146.40</td>
<td>195.95</td>
</tr>
<tr>
<td><strong>TOTAL (A)</strong></td>
<td>454.54</td>
<td>431.16</td>
</tr>
<tr>
<td><strong>EXPENDITURE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank charges</td>
<td>0.02</td>
<td>0.03</td>
</tr>
<tr>
<td>Amount Credited to Employee’s Provident Fund Account including Bank charges</td>
<td>397.52</td>
<td>408.61</td>
</tr>
<tr>
<td><strong>TOTAL (B)</strong></td>
<td>397.54</td>
<td>408.64</td>
</tr>
<tr>
<td>Balance being excess of Income over Expenditure (A-B)</td>
<td>57.00</td>
<td>22.52</td>
</tr>
<tr>
<td>Transfer to Capital Account</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>454.54</td>
<td>431.16</td>
</tr>
</tbody>
</table>

-Sd-  
Deputy Financial Advisor &  
Chief Accounts Officer

-Sd-  
REGISTRAR

-Sd-  
DIRECTOR
## PROVIDENT FUND ACCOUNT

### RECEIPTS AND PAYMENTS FOR THE YEAR 2016-17

(Rs. in Lakh)

<table>
<thead>
<tr>
<th>RECEIPTS</th>
<th>2016-17</th>
<th>2015-16</th>
<th>PAYMENTS</th>
<th>2015-16</th>
<th>2014-15</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Opening Balances</strong></td>
<td></td>
<td></td>
<td>GPF and CPF Payments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank Balance</td>
<td></td>
<td></td>
<td>Payments of Advances, Withdrawals and Final Settlement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3803 - Canara Bank</td>
<td>283.70</td>
<td>429.49</td>
<td>Interest Charges</td>
<td>0.02</td>
<td>0.03</td>
</tr>
<tr>
<td>GPF Receipts</td>
<td>936.62</td>
<td>1,186.93</td>
<td>Investments</td>
<td>59.52</td>
<td>1,090.60</td>
</tr>
<tr>
<td>CPF Receipts (Subscription &amp; Contribution)</td>
<td></td>
<td>2.65</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repayments of loan amount</td>
<td>181.21</td>
<td>39.52</td>
<td>Cash Balance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest and Principal amount Receipts</td>
<td>167.36</td>
<td>1,256.76</td>
<td>3803 - Canara Bank</td>
<td>161.89</td>
<td>283.70</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>1,568.89</td>
<td>2,915.35</td>
<td><strong>TOTAL</strong></td>
<td>1,568.89</td>
<td>2,915.35</td>
</tr>
</tbody>
</table>

-Sd-  
Deputy Financial Advisor & Chief Accounts Officer

-Sd-  
REGISTRAR

-Sd-  
DIRECTOR
Homage

Sri. S Venkatesh, Office Assistant 04.05.2016
Sri. Sridhara M, Office Assistant 15.11.2016
In the depths of the heavens, the moon sails shedding splendour that is a benediction. Below, on the troubled waters of life moves the mind of man, swan-like. Near-by is the lotus-heart, passion-laden and just blossoming. Hidden in the womb of waters lies peace, born of harmony, to be realised by one who has subdued passion.

विगाह मानोस्तिन नभोन्तरालं
प्रस्त्र सत्वः स्पृस्वणीयचंद्रः ।
प्रक्षुब्धसंस्तार महालिङ्गि मध्ये
भ्रमन्त्यिो मानस राजहंसः ।
ईशुदिकां सूक्तचतुरं कृतरं क्षोभं
हृद्यंकं सत्तितुं तु तत्र ।
जलस्य गर्भेनिहितासंपति
संयोज्ञजा संयमलब्धशान्तिः।