

## **SUMMARY AND RECCOMENDATIONS**

**PRE-CONFERENCE WORKSHOP**

**OF NEUROSCIENCE THROUGH INTEGRATED APPROACH**

**South Asian Association of Physiologists (SAAP)-4 Conference  
at Dhaka, Bangladesh**

**Date:** Dec 5-6, 2014

**Time :** 8.15 a.m. to 5.30 p.m. (Dec 5,2014)

2 p.m. to 4 p.m. (Dec.6,2014)

**Venue :** Bangabandhu Sheikh Mujib Medical University (BSMMU)

Saheed Milon Hall (Main)

&

Milton Hall

(Block-B, Administrative Section)

**[Submitted and placed by by Dr. Shyamal Roy Chowdhury (India) on Dec-6, 2014, 3pm to 4pm]**

## SUMMARY

### A) Preconference Workshop -- Inauguration (Day 1, Dec 5, 2014)

The following dignitaries were on the dias

- 1) Prof. Noorjahan Begum, Chairperson, Organising Committee, SAAP 4
- 2) Prof. Sharaine Fernando, President, SAAP
- 3) Prof. Robert G. Carroll, Member, Education Committee, IUPS
- 4) Prof. Arif Siddiqui, Chairperson, Pre-Conference Workshop, Organizing Committee, SAAP 4

**Moderators** - Dr.Taskina Ali, Prof. Shamin A.K. Chowdhury

**1. Prof. Noorjahan Begum, Chairperson, Organizing Committee,** delivered the welcome address. At the outset she expressed a hearty welcome to all the participants of the workshop/ distinguished speakers/delegates and the distinguished audience.

She appreciated the endeavour of Prof. Arif Siddiqui, Secretary General, SAAP, for arranging funds/ support from International Organizations like IUPS, IBRO, American Physiological Society. She also thanked all who have extended their hands for organizing SAAP 4 in Dhaka, Bangladesh. She expressed that in spite of many constraints, the members of the Organizing Committee, SAAP 4 and the members of BSP have tried their best to make necessary arrangements for making the conference a success. She hoped that the outcome of the Conference along with Pre-Conference Workshop will enrich the young Physiologists/Researchers to develop quality research.

She again welcomed all the participants of the workshop.

**2. Prof. Sharaine Fernando, President, SAAP, Sri Lanka,** delivered the Presidential address. She opined that neuroscience has formed a very significant part for medical/ paramedical/ other areas. She hoped that the participants will get new knowledge in teaching and research in South Asia, Asian Pacific region of the world.

She wished every success of this workshop.

**3. Prof. Robert Carroll, member, Education Committee, IUPS,** thanked the organizers for organizing the workshop. He also wished a success of the workshop.

**4. Prof. Arif Siddiqui, Secretary-General, SAAP,** presented the overview of workshop through through powerpoint slides. He expressed the objectives of the workshop. He also expressed that he is highly

indebted to Prof. Robert G. Carroll for his sincere co operation in organizing the workshop. He also extended sincere thanks for General Support from IBRO, IUPS and APS.

He thanked the organizing secretary and members of the organizing committee, SAAP 4.

### **i) Aims and Objectives of Workshop**

The workshop is aimed to define the difficulties encountered in teaching neuroscience. It is aimed to bring together the views of notable experts from diverse backgrounds and highlight the problems faced for neuroscience teaching in South Asian countries.

The workshop theme " Promoting Neuroscience through Integrated Approach " is specially meant to achieve the following :

- To build scientific bond amongst the physiologists including researchers, educationists and students with interest and expertise in neuroscience.
- To develop and promote cooperation in all matters related to Physiology education and research for the advancement of neuroscience in South Asia.
- To foster exchange of information and ideas in the field of Physiology and allied sciences.
- To promote peace, harmony, amity and progress in the South Asia using SAAP platform and enhance its interaction with the world community through International Organizations like IUPS (International Union of Physiological Sciences ), IBRO (International Brain Research Organization) and other similar forums.

### **ii) Participants**

The participants registered from different countries were 154. But the participants joined were 30.

## **B) WORKSHOP SUMMARY (DAY 1, Dec 5, 2014)**

The workshop of Day 1 had 4 sessions . In the first 3 sessions the following experts from different countries delivered their valuable lectures to the participants. The 4<sup>th</sup> session was Demonstration session.

### **1<sup>st</sup> Session: (8.45 a.m. to 10.25 a.m.)**

Chairperson : Prof. Robert G. Carroll (USA)

Co-Chairperson: Prof. Jafri M. Abdulla (Malayasia)

The Speakers: 1) Prof. Saeed Semnanian (Iran)

2) Prof. Vajira Weerasinghe (Sri Lanka)

3) Prof. K.K. Deepak (India)

4) Prof. H.R. Ahmad (Pakistan)

### **1) Prof. Saeed Semnanian (Iran)**

The topic of his lecture was **“Promoting Neuroscience in South Asia”**. He opined that in order to promote neuroscience in South Asia , first and foremost we have to have a clear understanding of the present situation in this field in the countries of South Asia. We have to know the expertise and educational status of Faculty members, position of updated research equipments, position of budget of the Research Institutes for purchasing new equipments, availability of funds/ financial grants in Universities/eagerness of the students for undertaking research in neuroscience etc.

He expressed that after ascertaining the specific problems, necessary steps may be taken for solutions of the problems.

He also suggested some steps for the purpose of promoting neuroscience. These are as follows:

- i) To encourage neuroscientists to do short-time sabbaticals.
- ii) To provide guest lectures and seminars in different areas of expertise.
- iii) To initiate collaborative research projects among interested faculty members.
- iv) To procure functioning research equipments, which are no longer in use in well equipped laboratories of the world, through donations.
- v) To establish distant learning centres, where on-line lectures or research classes be made available through telecommunication.
- vi) To organize neuroscience courses at local universities.
- vii) To establish permanent research facilities at local universities
- viii) To establish a National Neuroscience Society, Organization or Centre.
- ix) To promote international collaboration in neuroscience research.

### **2) Prof. Vajira Weerasinghe (Sri Lanka)**

The topic of his deliberation was **”Neurophysiological assessment of NMJ and the effect of toxins/poisons”**. He discussed about the therapeutic effects of botulinum toxin for many neurological disorders such as hemifacial spasms, blepharospasms, cervical dystonia, writer’s cramps, cerebral palsy,

stroke, spasticity, neuralgia, hyperhidrosio and several movement disorders. He also informed that organophosphates are neuromuscular junction toxins known to act post-synaptically.

He expressed that snake venom may cause pre-synaptic or post-synaptic neuromuscular junction block. He studied the effect of krait envenoming on the nervous system. He also informed that percent studies on the venom of humped nose viper, a non-venomous snake, have suggested that its venom has a significant clinical toxicity. He concluded that useful information about neuromuscular junction(NMJ) could be obtained by electro-physiological methods and many toxins and poisons act on the neuromuscular junction. These studies have significant and therapeutic benefit.

### **3) Prof. K. K. Deepak (India)**

The topic of his lecture was “**Autonomic Neuroscience : The key integrator for Medical sciences**”. He informed that the Automatic Nervous System (ANS) influences the functioning of almost all organs through direct innervations and/or through influencing vasculature. He also informed that they have established the first Autonomic Function Testing (AFT) laboratory in the Dept. of Physiology, AIIMS, in India. In the AFT laboratory, equal emphasis is given to basic research, applied research and to provide routine testing facility to the patients of AIIMS, which is a tertiary patient care premiere Institute in the country. Uptil now automatic function has been studied in more than 30 disorders involving automatic nervous system such as degenerative neurological disorders, diabetes mellitus, chronic renal failure, epilepsy, childhood anxiety disorder, irritable bowel syndrome, rheumatrel arthritis etc. He informed that they have studied several physiological effects on autonomic function such as effect of physical exercise and training, sympathetic-parasympathetic interaction, effect of graded head-up tilt, effect of graded efforts during valsalva maneuver, effect of lower body negative pressure etc.

He concluded that the automatic function investigation is serving as the key integrator for medical sciences. He suggested that considering the wide applicability of autonomic neuroscience, departments of physiology at various medical Institutes/Colleges should initiate and run such laboratories like AFT laboratory.

### **4) Prof. H.R. Ahmad (Pakistan)**

The topic of his lecture was “**Battle of Morphogens in the formation of a Forebrain: A Review**”.

He informed that an abstract thinking is the ability to make generalization, draw conclusion, see pattern in things. It is the ability to have deductive and inductive reasoning. More and more research is coming out which continues to show that brain is a muscle which must be utilized to expand our cognitive abilities. The humans are unique as they possess forebrain with a specialized Pre Frontal Cortex (PFC). He expressed that PFC is able to perform dynamic complex tasks like to predict and foresee things. The cognitive neuroscience group at MIT has shown that it is the PFC which is involved in abstract thinking. Concrete thinking is the building blocks on which our abstract thinking develops. One interesting aspect is to investigate neural circuits of brain-body-axis in context of cellular, molecular and genetic changes that produce diseases such as Epilepsy, Autism, Schizophrenia, Alzheimer and traumatic brain to rob

individuals to off their PFC functioning and therefore abstract reasoning skills. Recent studies have shown that there is a battle between morphogens, sonic hedgehogShh and Wnt inside a vertebrate embryo to decide whether we (or frogs and/or chickens) will have a forebrain. The embryonic brain develops along a dorsal-ventral-axis using different cell types under the influence of morphogens. Wnt trickles downwards from the dorsal cell group and Shh from the ventral one. Both morphogens diffuse along the gradients in opposite like in a battle field. Shh induces a transcription factor VAX that regulates dnTcf712gene expressions with a product that blocks dorsal cell group. If Shh wins the tug of war, the forebrain will be formed. Otherwise, overactiveWnt signaling would develop a brain without a forebrain. Aforebrain is thus a gift of the victory of sonichog signaling.

The session was very much interactive. Several questions were raised from the audience and the speakers have shared their expertise/ experiences and answered their queries.

A Tea break was arranged after the 1<sup>st</sup> session.

## **2<sup>nd</sup> Session: (10.50 a.m. to 12.00 p.m.)**

Chairperson : Prof. . Saeed Semnanian (Iran)

Co-Chairperson: Prof. Amar K. Chandra (India)

The Speakers were: 1) Prof. Tharaka Dassanayake (SriLanka)

2) Prof. Quazi Deen Mohammad (Bangladesh)

3) Prof. Edathil Vijayan (India)

### **1) Prof Tharaka Dassanayake (Sri Lanka)**

The topic of his discussion was “**Cognitive Functions : Principles Assessment, Techniques and Implications**”. He informed that various brain functions constitute cognition. These are perception, attention, learning and memory, reasoning and executive functions such as planning, decision making, task switching and inhibitory control. He also informed that the scientific study of the brain and cognition that is, cognitive neuroscience, has progressed rapidly during the last few years. It has unified the strengths of different established disciplines like neurophysiology, neuro-imaging, cognitive psychology, molecular biology and neural network modelling. He expressed that the goal of modern cognitive neuroscience is to understand cognitive system by reconstructing it. He informed about different techniques of cognitive assessment.

### **2) Prof. Quazi Deen Mohammed (Bangladesh)**

The topic of his lecture was “**Neurophysiology – A Backbone in Neurodiagnosis – Prospect in Bangladesh**”. He discussed about the significances of use of electroencephalography (EEG), Nerve

Conduction Study (NCS), Electromyography (EMG) etc. in the neurophysiological investigations and in the diagnosis of neurological disorders. He informed that in Bangladesh EEG has been mostly applied in Epilepsy (about 90%) above where the diagnostic sensitivity is about 62.7%. NCS and EMG have been used to diagnose commonly in peripheral neuropathy, carpal tunnel syndrome, muscle and myoneuronal junctional disorder. Besides these, single fiber EMG, Repetitive Nerve Stimulation test, evoked potentials, Polysomnography are also very useful in the diagnosis of neuromuscular junctional disorders and sleep disorders. He expressed that neurophysiology is now an integral part of clinical neurology. It also helps in the neurodiagnosis.

### **3) Prof Edathil Vijayan (India)**

The topic of his discussion was “**Current Trends in Teaching and Research in Neurosciences, Neuro-endocrinology and Behaviour**”. He informed about the exciting discovery of various peptide hormones within the brain and other nervous tissues. He informed that within the nervous system, peptide hormones function as neuro transmitters or neuromodulators or both depending on their functional demand. He expressed that one of the most exciting recent findings in neuroscience is that immune system and neuro-endocrine system communicate through a common signal molecule nitric oxide (NO).

He summarized the current knowledge of the brain peptides/hormones, nitric oxide as neurotransmitters, neuro-modulators or signal molecules. He also informed about some of the techniques used in neuroscience and behavioural teaching and research at the post graduate level, specially in the developing countries.

It was a brainstorming, interactive session. Several questions were raised from the audience after the delivery of the lectures by Prof. H.R. Ahmed, Prof. Jafri Abdulla, Prof. Vajira Weerasinghe.

### **3<sup>rd</sup> Session: (12.05 p.m. to 12.55 p.m.)**

Chairperson : Prof. . Vajira Weerasinghe (Sri Lanka)

Co-Chairperson: Prof. Ali M. Soomro ( Pakistan)

The Speakers: a) Prof. Ramesh Rajan (Australia)

b) Prof. Jafri M. Abdulla ( Malayasia)

#### **1) Prof Ramesh Ranjan (Australia)**

The topic of his lecture was “**The use of Multi-Media E Folios in the teaching of Neuroscience**”. He informed that they have been exploring the use of electronic Folios (E-Folios) integrating high quality text and images with videos (self-generated and You Tube), and quizzes in an introductory neuroscience

unit. The specific unit selected for this is a well-resourced unit with extensive online provision (through University Learning Management Systems) of :

- i) detailed lecture notes
- ii) a vast repertoire of Formative assessment materials.
- iii) A large library of multimedia support materials
- iv) Online problem class quizzes (analytic and numerical problem solving exercises)
- v) a very well-used and interactive Discussion board.

Integrated e-Folios were generated for delivery of lecture content, for preparing students for laboratory classes. It has been observed that student response to the e-Folios lecture content delivery was very positive.

## **2) Prof Jafri Malin Abdullah (Malayasia)**

The topic of his lecture was “ **Promoting Neuroscience through Integration** ”.

He informed that clinicians hardly collaborate with their basic and applied counterparts in most of Asia except in Singapore, Malayasia and Thailand. The whole process has changed from “Silo” based Science to trans-disciplinary and translational science. Here collaboration between different scientists has started.

He informed that South-East Asian Sciences and its output is growing fast. He suggested that it must grow in an integrated manner so that it becomes meaningful.

The session was extremely interactive. Several questions were raised from the audience and comments and suggestions from Prof. H R Ahmed and Dr. Sheilla K. Pinjani from Pakistan and others made the session vibrant. A lunch break and prayer were arranged after this session.

## **4<sup>th</sup> Session: (2.25 p.m. to 5.10 p.m.)**

It was the Demonstration session. This was a parallel session and lasted for 3 hours. The participants were divided into two groups according to two topics.

The topics were as follows:

### **A. Demonstration on Multiple Nerve Location and Block on Cadavar.**

Venue : Shaheed Dr. Millon Hall (Main)

Demonstrators : Prof. A K M Akhtaruzzaman, A K M Faizul Hoque and Dilip Kr. Bhowmik (Bangladesh)

Moderator : Dr. Taskina Ali (Bangladesh)

No. of Participants :15

**Topic: Cadaveric Nerve Dissection and Location, Relation to Neurophysiology**

In this workshop, brachial plexus and its branches were presented to the participants in a pre-dissected cadaver.

The demonstrators explained the important role of individual nerve and plexus block in the study of neurophysiology, anesthesia, pain medicine and surgery.

**B. Demonstration on Electrophysiology (EEG, EMG, NCS, ERG, AEP)**

Venue : Milton Hall

Demonstrator : Dr. Selina Husna Banu (Bangladesh)

Moderator : Prof. Shamin AK Chowdhury (Bangladesh)

No. of Participants :15

**Topic: Clinical Neurophysiology**

In this workshop demonstrators have shown with video-clips the use of neurophysiological evaluation in clinical practice. It has been expressed that great caution should be taken to avoid misinterpretation of evolving brain functions; technical- biological, non-biological artifacts and unknown physiological neuronal activities.

**C) WORKSHOP SUMMARY (DAY 2, Dec 6, 2014) 2pm – 4pm**

The workshop of Day 2 (Dec 6,2014) had two sessions.

**1<sup>st</sup> Session:**

Chairperson: Prof. Arif Siddiqui (Pakistan)

Co-Chairperson: Dr. Rita Khadka (Nepal)

Speakers : a. Prof. Vajira Weerasinghe (Srilanka)

b. Prof. Robert G. Carroll (U.S.A.)

**1) Prof Vajira Weerasinghe (Sri Lanka)**

The topic of his discussion was “ **Teaching Neuroscience using vertically and Horizontally integrated approach**”.

He discussed about the system-based, integrated module-based model of the undergraduate medical curriculum followed for the last 10 years at Faculty of Medicine, University of Peradeniya, Sri Lanka. Neuroscience is taught in the form of an integrated module. Horizontal integration has been there from the different disciplines in the said integrated module entitled “ Nervous control and behaviour ”. There is contribution from the Departments of Physiology, Anatomy and Biochemistry. Behaviour section of the module is conducted by the Dept. of Psychiatry. Most of the teaching-learning activities are in the form of lectures, small group discussions, practicals, assignments and seminars.

For improvement of the vertical integration of the module, problem-based type of tutorials called “Clinical Cases of Relevance” (CCR) have been introduced. Another approach to improve vertical integration is through a seminar on “Applied Physiology of Pain involving Dept. of Physiology, Anaesthesiology and Psychiatry”. He suggested that neuroscience taught through this approach will promote the subject in a horizontally and vertically manner in the medical undergraduate curriculum.

## **2) Prof. Robert G. Carroll (USA)**

The topic of his lecture was “ **Assessment tool for Neuroscience**”.

He discussed about the competency framework adopted in most medical schools in USA. This framework has been adopted in order to better align under-graduate medical education with the knowledge, skills and attitudes needed to practice. Implementation of this approach means that disciplines like Neuroscience must match their teaching and assessment with the broader institutional curriculum. He informed that the pre-clinical Neuroscience block/course in the USA consists of lectures, small group discussions, laboratories and also acquiring clinical skills needed for a neurological examination. Each of these components contributes to one or more of the institutional competencies. So those must be assumed. Assessment of knowledge uses the familiar tools of multiple choice, essay type questions, oral and practical examinations. He also informed that assessment of interpersonal and communication skills requires direct observation with peers and instructors. Practice based Learning and Improvement Assessment require observation of a student’s ability to change behavior following formative feedback. For Courses incorporating clinical skills training, direct observation of those skills allows assessment of Patient Care competencies. The other two competencies- Ethics and Medical professionalism and System-Based Practice are best addressed on other aspects of the under –graduate medical curriculum.

Questions were raised and comments/suggestions were expressed by the following from the audience:

1. Prof. H.R. Ahmed (Pakistan)
2. Prof. Jatri M Abdullah (Malayasia)

3. Prof. Vajira Weerasinghe (Sri Lanka)

4. Prof. Hossain Reja (Bangladesh)

Prof. Robert Carroll also expressed his views and comments

Comments from the audience from Bangladesh and other countries like Pakistan, India, Nepal, Sri Lanka made this session a vibrant and interactive session.

## **2<sup>nd</sup> Session**

### **Concluding Session:**

- After the 1<sup>st</sup> session of of Day 2 (Dec 6,2014) in the concluding session the Workshop Evaluation was delivered by **Dr. Sheilla K. Pinjani (Pakistan)**
- Workshop Summary and Recommendations were then placed by **Dr. Shyamal Roy Choudhury (India)**

The workshop then ended with the vote of chances to the chair.

## RECOMMENDATIONS

**of the PRE-CONFERENCE WORKSHOP of the 4<sup>th</sup> Biennial Conference of  
South Asian Association of Physiologists (SAAP)  
along with  
3<sup>rd</sup> National Convention of Bangladesh Society of Physiologists (BSP)**

Held at **Shaheed Dr. Millon Hall, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka**

Held during **5-6 December 2014**

**Theme : Promotion of Neuroscience Through Integrated Approach**

**Recommendations:**

1. The Workshop recognizes the urgent need for promotion of neuroscience in different Universities, Medical organizations, Research organization/ institutes in South Asia and identifies the present situation in this field in the countries of South Asia and also urges upon the concerned authorities such as Union/State govt/UGC and others to provide **proper financial support** to the above noted organizations for **developing infrastructural facilities, resource development, falling under their purview.**

2. The workshop recognizes the problems being faced by the neuroscience professionals in the promotion of neuroscience teaching and recommends the organization of neuroscience courses for UG and PG in different Universities/ Medical schools /Research organizations/institutes.

3. The workshop urges upon the authorities of the Universities and different Research Organizations to take early steps in the direction so that their students direction be more benifitted to meet the challenging paradigms of the neuroscience organizations of different countries of South Asia.

The workshop strongly recommends that for this purpose, proper plans and programmes, revised curriculum for UG / PG be prepared by professional associations / neuroscience societies/ concerned authorities of each country and the faculty of each country be properly oriented in this direction.

4. The workshop recognizes the need for increasing the number of personnels with expertise in neuroscience, encouraging short term sabbaticals, providing guest lectures, seminars, workshop with hands-on training in the different countries of South Asia.

The workshop urges upon the authorities of different Universities/ Medical schools /Research Organizations/Institutes to organize short-term sabbaticals, seminars, workshops, with hands-on-training for young physiologists, training for faculty members, researchers in neuroscience on different areas of neuroscience.

5. The workshop urges upon the need for Exchange Programs of Faculty members/young researchers/ students of Physiology and allied sciences/Neuroscience between researchers/faculty members/young students of different countries of South Asia and strongly recommends to implement this through National/ International Societies.

6. The workshop strongly recommends that the training modules for the short term sabbaticals/ orientation program or other programmes be prepared by the above noted concerned organizations/ Institutions for fulfilling their objectives, preferably with collaborative efforts on country / regional basis and/ or national basis. The possibilities of having these modules prepared by the organizations like (UGC) University Grants Commission, Commission of different countries, SAAP, UPS, IBRO, Federation of Asian, Oceanian Neuroscience Society, FAOPS, FENS, TWAS be explored at the earliest.

7. The workshop recognizes the need of collaborative research in the field of neuroscience and to integrate neuroscience with other research areas like Basic and Clinical Physiology, Genetics, Radiology, Informatics, Social Science, Biomedical Engineering, Psychology, Arts etc.

The workshop urges to minimize the gap between basic and clinical physiology and other areas of allied sciences. The workshop strongly recommends collaborative integrated research on neuroscience and between neuroscience scientist and anaesthologist, basic and clinical physiologist, biomedical engineers, bioinformatics scientist , Biologists, Neurologists/ Psychiatrists, Computer scientists, Social scientists, Faculties from Arts etc.

8. The workshop also urges upon the Professional Associating of each country of the South Asia and South Asian Association of Physiologists etc. to take early step in formulating guidelines which would be helpful to meet the requirements of the neuroscience professionals in collaborative research between different countries and neuroscience related professionals.

9. The workshop recognizes the need for establishing distant learning centres for the promotion of neuroscience in different countries of South Asia.

The workshop strongly recommends the establishment of distant learning centres which shall organize on line lecture / research classes by neuroscience experts through experienced Telecommunication for the benefit of the Faculty members /students/ young researchers of different organizations of different countries of South Asia.

10. The workshop recognizes the advantages of the use of e-Books for lecture content delivery, e-Manuals for practical classes and virtual practicals through virtual laboratories.

The workshop recommends to take necessary steps by the professional organization in production of e-Books, e-Manuals by the personnels with expertise in this area for the benefit of the students of neuroscience.