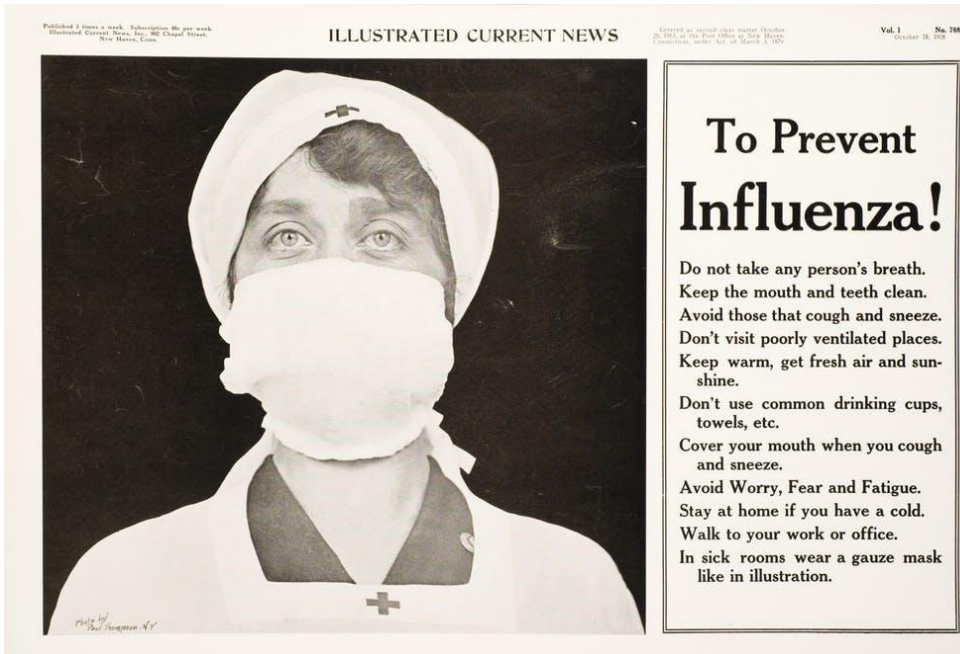


SAAP Bulletin

The newsletter of the South Asian Association of Physiologists

October 2020 | Volume 3, Issue 4 | ISSN: 2714-1756



Poster of a Red Cross nurse wearing a gauze mask over her nose and mouth – with tips to prevent the influenza pandemic. The National Library of Medicine/NIH

SARS-CoV-2 causing COVID-19 has been controlling the world for almost one year now.

Over a century ago, Spanish Flu due to H1N1 influenza A caused a similar pandemic, with higher mortality.

Surprisingly, despite vast advances in medicine and technology, same means used a century ago are still being used to control the current pandemic.

Human physiology, though light years ahead in its advances, still remains the same!

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Published by:

South Asian Association of Physiologists: No.112, Model Farm Road; Colombo-08, Sri Lanka

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(SAAP)

2018-2020

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From Editor's Desk



Professor Piyusha Atapattu

Since revamping the SAAP Bulletin almost one year has passed. Four quarterly issues of the SAAP Bulletin have been published.

However, during most of this year, SAARC countries like the rest of the world, and the SAAP fraternity have not been able to conduct their normal activities.

Coronavirus is not showing any tendency to slow down its relentless spread of infection to all corners of the world. Many local, regional and international conferences and scientific meetings have been postponed, as gatherings are banned in many countries. Age-old measures, such as social distancing, hand washing and wearing masks, have assumed a new importance.

However physiologists in SAAP countries have not been stopped by coronavirus. Physiology teaching and evaluations are being continued, with novel methods tried out for optimal outcomes. Virtual conferences and online meetings have become the norm for disseminating new information. Research is gathering momentum, and results of vaccine trials are showing promise. There is a spate of new knowledge being published, as many are working from home and have more time for writing.

This year has been a time for reflection, reevaluation and innovation. This issue of the SAAP Bulletin addresses diverse aspects in physiology and challenges encountered, and how they were tackled in this era of COVID-19.

Stay safe

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SAAP-The Way Forward

Prof Muhammad Aslam was designated as the President SAAP for the remaining period 20018-2020 of the present SAAP council, subsequent to the demise of Prof Arif Siddiqui (Late) after taking Pakistan Physiological Society (PPS) on board.

This was decided in the SAAP Executive committee and advisory Board meeting held on 25th July 2020.

On this occasion, Prof Aslam emphasized on the following:

1. The Executive Committee of SAAP may make liaison with leadership of Hamdard College of Medicine, New Delhi, India to arrange SAAP-7 conference in the Year 2021. He said that an option be kept in mind for a Virtual Conference of SAAP-7 in 2021, in case COVID-19 Pandemic gets prolonged.
2. The Executive committee SAAP may develop close coordination with the member societies of SAAP to nurture ownership and belonging. He stressed upon that digital/online meeting or webinar may be arranged periodically with the member societies to foster better linkage.
3. The Executive committee SAAP may persuade with the member societies to

4. pay the dues to SAAP to keep financial matters flowing smoothly.
5. The member societies may contribute their intellectual input, writings articles, updates, news and views for publications in the SAAP bulletin.
6. SAAP may arrange webinars and presentations on any topic of interest of Plenary Speakers from SAAP forum on Quarterly basis. Professor Kusal Das has already been requested to give a talk on Environmental Health to trigger the activity.
7. The Executive Committee may speed up the process of Registration of SAAP and relevant societies may fulfil the requisites as a priority. This is a legal and ethical requirement.
8. He elaborated the need for SAAP members and member societies to stay together and share together to achieve the extra ordinary.
9. The leadership of SAAP may leave no stone unturned to reestablish its linkage and collaboration with FAOPS and IUPS.

Prof Muhammad Aslam
President, SAAP

The Journey of Science and Reason



Professor HR Ahmad
Professor of Physiology
at SIUT and AKU

The Library of Alexandria and a Museum was once the lighthouse of research on this planet. It was the first genuine institution of research based learning in the history of mankind.

The scholars of this centre of learning studied the cosmos. It is a Greek word for the order of the universe. It is in a way the opposite of chaos. Cosmos implies the deep interconnectedness of all things through both oral and written means of communication.

Here was a community of scholars exploring multidisciplinary fields yet being connected to each other in the order of the following: mathematics, physics, chemistry, philosophy, literature, arts, astronomy, geography, biology, engineering and medicine. Science and scholarship had come of age.

The Alexandria Library is where humans first collected systematically, the knowledge of the world to draw new road maps of life to live with the enlightenment of science and reason.

Let me introduce to you scholars of those days and times and their gifts to the world:

1. Eratosthenes showed us that the earth was not flat using imagination and experimentation.
2. Euclid taught us the science of geometry.
3. Hipparchus studied the brightness and constellation of stars.
4. Dionysius showed us the brain instead of heart to be the seat of intelligence.
5. Heron modelled steam engines.
6. Apollonius showed us how to derive ellipse, parabola and hyperbola from the conic sections.
7. Archimedes was a mechanical genius.
8. Ptolemy misled the world for 1500 years with his earth-centered model.
9. Hypatia was a mathematician and an astronomer and proposed the sun-centered model.
10. Berossus was a Babylonian priest being credited for a 3-Volume History of the World [Carl Sagan.2013].

Since at beginning of the universe, there were no galaxies, stars and planets, no life, no civilisations. However, it was modelled how from the chaos of the big-bang, the orderliness of the universe could evolve finally leading to the transformation of matter into human consciousness of reason, evidence and logic.

The journey of science and reason has enlightened the mankind with the following:

1. the age of the universe;
2. the age of the earth;
3. what we are made of;
4. where we come from;
5. why we all are so well adapted to the environments;
6. why we have night and day;
7. why we have winter and summer;
8. what is maximum speed at which anything can travel;
9. what the sun is;
10. what the Milky Way is;
11. why the sun neither sets nor rises;
12. we know viral, protozoan and bacterial diseases;
13. we can cross the Arabian Sea in hours;
14. we can land on the moon;
15. how the astrology is replaced by the science of astronomy.;
16. how the earth travels around the sun of a distance of 93 million miles per year and many more scientific discoveries of enlightenment. [Richard Dawkins 2017; Steven Pinker 2018; Alice Roberts 2013]

The journey of science and reason should continue through the university research laboratories to test the validity of imagination by experimentation.

The successful application of the triangle of reason, evidence and logic depends on the summation of faculty work energies and the curiosity propelling research, learning and public

service to derive the generation cycles of mentors and mentees of institutions.

Thus, education liberates mankind through the ability of creative thinking to let the ideas glow to the generation of light with the ownership of real research ambition [Ahmad and Hashmi 2017].

This manuscript is dedicated to my colleague and friend Dr Arif Siddique

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Online Teaching & Examinations during Covid-19: Are we successful worldwide?



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Azeem**

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The outbreak of Covid-19 pandemic has changed the world's daily physical routine to online communication in almost every field of human life.

Before Covid-19, the world was practicing online communication, but not for academics, except in virtual institutions. However, during complete lock down in this pandemic, the world has observed a geometrical boost in online communication especially for educational purposes.

In order to know that this world was fully successful in imparting online education and examinations, there is a need of proper assessment of the facts that we faced worldwide during complete lockdown.

World may be divided in two groups with respect to IT facilities.

- I) Excellent IT infrastructure
(High income countries)
- II) Poor IT infrastructure
(Low income countries).

Although, both of the above groups have faced similar threat from Covid-19, but various factors were there that resulted in mortality in either group equally. These factors may be referred to the state of hygiene & SOPs observed by them non-seriously.

Whereas, if imparting of online education is taken into account, it is important to know that the stakeholders (learner, teacher & institution) are well equipped in IT, beforehand or not, especially in remote and rural areas where students are residing.

Use of smart phone and internet browsing is not a skill any more. However, skill is required to resolve a problem that arises in internet connection or during online use of mobile, tablets, PCs, laptops, etc., to remain connected both audibly and visually to the teacher from where the education is being imparted. Further, the knowledge for the use of Zoom, google meet and other conferencing soft wares is also important.

Lack of such facilities and skills were the main issues with the low income countries with poor IT infrastructure and training.

Therefore, dissatisfaction has been shown by both the learners and teachers due to problems in the following:

1. Internet services
2. IT gadgets used for communication
3. Ineffective handling of the above two by either learners or teachers.
4. Inadequate IT facilities.

Another aspect was the extra financial burden faced by parents in the provision of IT gadgets to their children to get benefit from online education. In low income countries, they were unable to afford it, if having 2-4 or more children.

On the basis of above facts it cannot be said that online education during Covid-19 was fully successful throughout the world.

Nevertheless, in most of the high and some of the low income countries, it was truly successful and students did well to grasp knowledge with active learning and not only the interactive lectures were conducted online by using illustrations, animations and brain storming video clips, the experimental training was also imparted online with the use of simulated techniques, pre-recorded experiments by Lt-software along with some problem solving activities, as we have done in our institution with some limitations.

Even online examinations have been conducted successfully but with some questions on transparency and fairness, which might have hampered true grading.

The question which is being raised for blended or hybrid teaching in future (post-lockdown) by experiencing the Covid-19 pedagogical change. It is to be noted that Face to Face teaching has

no alternative and unless we face pandemic threats as during peaks of Covid-19 with complete lockdown, then the online education is the only solution to prevent loss or delay in academic year.

Lastly, funding institutions around the world may extend concrete support towards low income countries with respect to IT training and built up of IT infrastructure. Additionally, the low income countries should also strive by themselves for it, from whatever resources they have, by curtailing down other heads of expenditures.

Consequently, online education will become effective in such pandemic situations, in most of the countries of this world.



Autonomic dysfunction in older adults: Can investigations help in the management?



Dr. Chamila Dalpatadu
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Older adult population is expanding both globally and locally with the demographic transition. While many of them lead healthy lives, some develop various geriatric syndromes with advancing age namely falls, cognitive impairment, urinary incontinence etc. Often falls are multifactorial but postural hypotension is an important underlying cause.

Autonomic dysfunction, iatrogenic factors and dehydration are some of the etiological factors for developing postural hypotension. Autonomic dysfunction may be secondary to underlying diseases such as diabetes mellitus or amyloidosis. However, some may not have any identifiable risk factors to develop autonomic dysfunction.

Manifestations of autonomic neuropathy can vary and can affect cardiovascular system, gastrointestinal and many other systems. Many life threatening complications are associated, specially with cardiac autonomic neuropathy such as silent cardiac ischemia, nocturnal hypertension, pro-arrhythmic prolongation of

QT interval¹ and lacunar infarctions. Proper identification of various aspects of cardiac autonomic neuropathy is mandatory as it can guide the management of these older adults in-order to prevent complications.

Cardiac autonomic neuropathy can be assessed by 24-hour blood pressure monitoring together with Holter monitoring¹. Heart rate variability can be analysed by power spectral densities of rhythmic oscillations over a frequency range of <0.4 Hz. Low frequency(LF) to high frequency(HF) ratio is an indirect index of sympathetic nervous system activity while HF indicates parasympathetic activity¹.

When 24-hour blood pressure is considered nocturnal non-dippers and extreme dippers had significant cerebrovascular disease when compared to dippers¹. In a cohort of hypertensive older adults, non-dippers had lower asleep/awake ratio of HF and higher asleep/awake ratio of LF/HF compared with both dippers and extreme-dippers, suggesting decreased daytime sympathetic nervous system activity and suppressed nocturnal increase in parasympathetic nervous system activity¹. This nocturnal suppression of parasympathetic activity in non-dippers may predispose them to cerebrovascular events during night.

According to Ewing et al.² cardiac autonomic functions can be assessed non-invasively by five

simple tests; Cardiac Autonomic Reflex Testing (CART). However, the heart rate response to deep breathing is the test which is most commonly utilized, because of its high reproducibility and specificity³. Cardiac parasympathetic function is assessed by the Valsalva ratio and heart rate response to deep breathing or standing up, whereas the orthostatic hypotension, the blood pressure response to a Valsalva maneuver and sustained isometric muscular strain provide indices of sympathetic function^{4,5}. Sudomotor function can be assessed clinically through placing a kitchen spoon on skin⁴.

In a study done in India Parashar et al⁴. found that there was a significant increase in mean level of blood pressure response to hand grip test and postural blood pressure drop with advance age which reflect a reduction in sympathetic function. Similarly, Valsalva 30:15 ratio decreases significantly with advance age reflecting reduction in parasympathetic function in healthy subjects⁴.

CARTs have number of confounding factors and recommendations have to be followed when carrying out these tests⁵ but never the less these tests are non-invasive, easy to perform and reproducible and safe. The importance of proper diagnosis of cardiac autonomic neuropathy (CAN) in older adults through investigations is highlighted in number of studies.

Identification of non-dippers and extreme dippers can help in antihypertensive management of these elders enabling minimizing adverse effects due to drugs¹.

Furthermore, as cardiac autonomic neuropathy is associated with high risk of cardiovascular and cerebrovascular events preventive measures could be implemented. Similarly, CAN assessment can ascertain the perioperative risk as well as suitability to undergo vigorous exercise as appose to moderate physical exercise when exercise programs are designed for elders⁵.

Autonomic dysfunction is amenable to modulation through certain therapeutic interventions such as graded aerobic exercise and meditation. Specially improvement in parasympathetic function has been observed due to meditation in older adults^{6,7}.

Proper identification of CAN in older adults through investigations enable proper management of these older adults who are likely to develop adverse outcome due to autonomic neuropathy related complications.

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During training of staff at the Department of Physiology, Faculty of Medicine, University of Colombo, with Indian experts joining through zoom



Autonomic function testing equipment



Dr Arif Siddiqui Memorial Lecture

Pakistan Neuroscience Society Conference

17th October 2020



Professor HR Ahmad
Professor of Physiology
at SIUT and AKU

Thank you, Dr Ather Enam, for the invitation to declare Dr Arif Siddiqui Memorial Lecture of the Annual Conference of Pakistan Neuroscience Society. It was kind of you to have thought of him in this way for his devoted service to science.

Dr Arif Siddiqui walked upon this planet with medals of dignity and integrity leaving behind a rich legacy of educational enabling environment to nurture human connectivity in South Asia. He was one the founding members of Pakistan Physiological Society radiated from the Aga Khan University in 1987.

He developed and looped PPS with International Union of Physiological Sciences. South Asia Association of Physiologists was his brainchild to connect the region through science, reason and humanism. His beauty was that he did what he said, known as integrity but with commitment and dignity.

Dr Arif Siddiqui has passed on the baton to young leaders to develop his legacy to strengthen the axis of PPS – SAAP - IUPS. This was very dear to him. His untiring endeavor was and is meant to drive the generation cycle of scientists at national, regional and international levels to bring peace in the region through

science and humanism. The driving message of the lecture series is to hold fast the true essence of science being definable and verifiable with freedom but under the weight of responsibility.

Together in the presence of Dr Arif Siddiqui's family, friends and colleagues on this occasion of 6th Annual Neuroscience Conference on 17th October 2020 under the leadership of Dr Ather Enam, Professor and Chair of Surgery at Aga Khan University and his unique team, I announce Dr Arif Siddiqui Memorial Lecture declared as a regular feature of the Annual Conference of the Pakistan Neuroscience Society known as PASBAN.

With profound regards to our dear friend Dr Arif Siddiqui with tears of gratitude "Sleep well my friend "while you are residing in our hearts.

HR Ahmad

SIUT and AKU: 17 10 20



News and Events

Workshop on “How to let go of stress being a medical student in lockdown by metacognition & mindfulness intervention”



On August 29, 2020, an interactive online workshop was organized by the department of medical education (DME) for the students of University College of Medicine (UCM), The University of Lahore (UOL).

The workshop was facilitated by Prof. Dr. Samina Malik, Head of Physiology, UCM, UOL and an international guest speaker, Dr. Sarmishta Ghosh, Associate Professor of Physiology and Program Director, Postgraduate Certificate in Health sciences at international Medical University, Kuala Lumpur, Malaysia. The speakers were welcomed by Dr. Tayyaba Azhar, Assistant Director, DME and the workshop was cofacilitated Dr. Shamaila Saleem, Associate Professor Department of Physiology at UCM.

This workshop introduced the stress coping strategies of metacognition and mindfulness. Dr. Sarmishtha Ghosh highlighted in detail the mechanisms by which human body tries to cope

with stress physically and mentally. The biggest cause of stress is the mismatch between our expectation and achievement. Stress in an individual perception and different people react to it in different ways. Stress may demotivate the students and make them fall sick.

Covid-19 may stay with us for long. Students should learn 3 major strategies to cope with stress: Resilience, Resistance and adaptation. Stress may affect personal and healthy life of an individual. Students mostly suffer from stress due to lower grades or fear of failure, which in turn results in physiological arousal and emotional flooding. This may stop cognitive process. Students may avoid physical activity during this phase and become aggressive or depressed. Troubled sleeping, loss of appetite, indigestion, headache, inflammatory bowel syndrome and feeling of being overwhelmed are common physical consequences. Cognitive symptoms include fear of future and worrying about how to report grades to the parents.

Dr. Sarmishta described how students can get through such situations by setting priorities, and identifying confusions. She advised to make a habit of asking for help too. She explained the concept of mindfulness and meta cognition. She explained mindfulness as the basic human ability to be fully present, aware of where we are and what we are doing, without being overly reactive or overwhelmed by what is going on around us. Mindfulness is something we all naturally possess under normal circumstances, but it is more readily available to us when we practice on a daily basis. Whenever you bring awareness to what you're directly experiencing via your senses, or to your state of mind via your thoughts and emotions, you're being mindful.

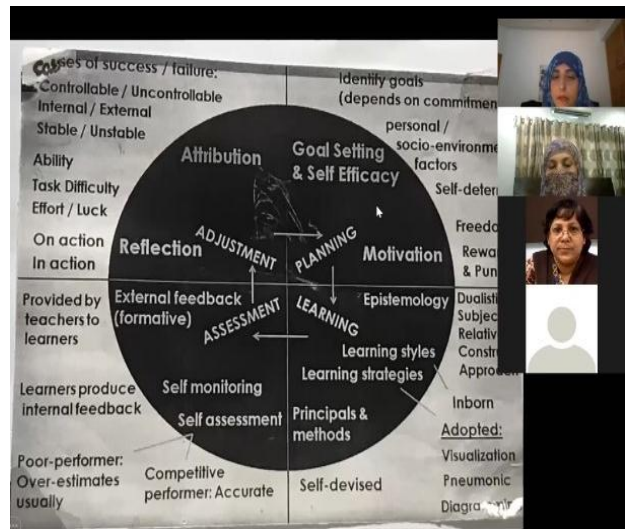
Research has provided evidence that when you train your brain to be mindful, you're actually remodeling the physical structure of your brain.

Prof. Samina Malik made the students perform mindfulness meditation. She elaborated that it requires from us to suspend judgment and unleash our natural curiosity about the workings of the mind, approaching our experience with warmth and kindness, to ourselves and others. To Practice meditation, one do not really have to sit at the corner of the room. It can be practiced, even if one is eating, listening to music, walking or painting. Metacognition is about reflecting on your own activities and mental states Learning metacognition strategies can improve learner's academic performance.

Dr. Samina Malik focused on the concept of karma, where intent and actions of an individual (cause) influence the future of that individual (effect). She emphasized on the differences and outcomes of competition verses collaboration among students. As a team, together everyone achieves more. Inculcate the habit of tutoring fellow friends; this will develop the process of deep learning. Alone one can go faster, together one goes farther. Everyone achieves his milestones at different times. One should be grateful for what he has. Students should see problems as opportunities to get more out of what they have.

2x2 Time management matrix to avoid stress

	URGENT	NOT URGENT
IMPORTANT	Quadrant I urgent and important DO 2-3 days	Quadrant II not urgent but important PLAN 2 weeks
NOT IMPORTANT	Quadrant III urgent but not important DELEGATE 1 week	Quadrant IV not urgent and not important ELIMINATE 1 month



Self-regulated learning cycle from planning to adjustment followed by improvement, everytime the cycle is repeated.

To practise mindfulness, tapping technique was explained and performed. If we act confident our brain behaves normally. Learn to live in the moment and cherish it.

Certain mindful exercises were discussed/practiced:

- Mind & drinking (feel, cherish , chew & gulp slowly)
- Mindful seeing (open-minded, question your perceptions)
- Mindful speaking (eye-contact & posture)
- Mindful listening (to understand, the other person's stance)
- Mindful reading (what I am reading? Application?)
- Mindful writing (Is my brain involved in note-taking?)
- Mindful walking (am I enjoying nature around or phone call? Is my mind still full of my worries)
- Mindful Meditation ?(focus on present: Breathe. Temperature, texture, sounds, fragrance etc.)

Students were invited to ponder on the following tips:

- Practice personal entrainment. Prefer to Act than React most of the times.
- See yourself as a 3rd person... step out of your situation
- Instead of seeing WHAT they do... Try to see... WHY they do..... what they do?
- Your CAPACITY is different from that of others
- Expecting reciprocation may hurt you..
- Treat others.. the way you want Nature to treat you!
- Stand in their shoes... let go... Forgive and forget!

Workshop on “Techniques in Physiological Sciences (TIPS) 2020: Application to Translation”

The workshop concluded with highly satisfying question and answer session. Students who participated reported that it helped them in coping with examination-related stress.

Prof. Dr. Samina Malik

After successfully conducting TIPS workshop for five consecutive years, we are happy to announce that this year we are organizing “Techniques in Physiological Sciences (TIPS) 2020: Application to Translation” workshop at Department of Physiology, AIIMS, New Delhi from 1st to 3rd, December 2020 on a virtual platform .

This year’s workshop will be based on the principle of “**how to use these techniques to comprehend their functions and applications**”. In other words, there is a need to interact on the formulation of the translation of techniques into tangible deliverables.

This workshop will be conducted as presentations based on:

- (a) Demonstration of techniques and analysis of the data obtained by using these techniques.
- (b) Progress made by participants using the techniques or benefits accrued from attending earlier TIPS.
- (c) Projection of intended future research or therapeutic applications of techniques learnt in TIPS.
- (d) Formulation of research questions based on these techniques (as per requests received in advance).

Not more than 15-20 participants would be enrolled in each workshop. **Last date for registration is 15th November 2020.** To attend this workshop, please visit the official website www.tips2020aiims.in where you are expected to select **three** workshops that you would like to attend. The final program shall be made according to the workshops selected by the willing participants.

Prof. K K Deepak

Promoting psychosocial well-being in breast cancer survivors: A bridge between mind, body and soul

This comprehensive presentation was made by Prof. Samina Malik, HOD Physiology, UCM

Compiled by Professor Piyusha Atapattu
Editor-in Chief, SAAP Bulletin

