



THE PHYSIOLOGICAL SOCIETY OF SRI LANKA

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Editorial

Dear Members,

Welcome to the first issue of the PSSL newsletter for 2020.

This issue comes out at a time where almost all activities of the PSSL are indefinitely postponed, due to the COVID-19 pandemic. Sri Lanka is moving towards adapting to the 'new normal' and teaching of Physiology has also spiralled towards a 'new normal'. The focus of this newsletter would be on COVID-19 related impact and activities. The featured article on pollution, personal experiences of air travel and quarantine and diverse Physiology teaching methods in COVID-19 times are highlights of this issue.

This issue includes tributes to two leading Physiologists who are with us no more. Professor Carlo Fonseka, an unrivalled legendary Physiologist, passed away in September last year. Commemorating his first death anniversary is a warm and heartfelt tribute written by a fellow Physiologist, published in The Island newspaper. The members of the PSSL were also deeply saddened and shocked about the recent demise of Professor Arif Siddique, a giant in the field of Physiology. A touching tribute to him, highlighting his many achievements is also included in this issue.

COVID-19 is thought to have emerged as a consequence of the deleterious effects of mankind on nature and subsequent protection from COVID-19 seems to also contribute to further pollution. These issues are timely described in our featured article on "Plastic Pollution following COVID 19: Impact on physiology and health".

Two of our PSSL members were overseas on training when the country went into lockdown due to COVID-19. Interesting accounts of their training and quarantine experiences are featured in this issue.

At a stage when the entire world is weaving in and out of periods of lock down against the deadly COVID-19 virus, we have had to resort to more creative and innovative methods to continue activities that we were engaged in. This issue contains accounts of such teaching learning methods of some departments of Physiology in the country.

The remaining few months of 2020 is going to be a period of adaptation. Adapting to live with COVID-19. Life as we know it will never be the same again. We as a nation will need to accept this reality and attempt to resume our livelihoods as much as possible conforming to the 'new normal'. It will be interesting to see how individuals and institutions will grow in this process.

Stay safe.

Dr Lakmali Amarasiri - Editor, PSSL

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Featured article

Plastic Pollution following COVID 19: Impact on physiology and health



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Magnitude of the Pre-COVID era plastic production and disposal

Plastic is everywhere, and we cannot imagine a world without plastic. It is in the phones, vehicles, toothpaste, food containers, dresses, equipment and almost everything used by humans in their day to day lives. Being cheap, light, transparent and malleable are some of the reasons for its versatility, and of course its indispensability.

Global plastic production since 1950 has surpassed 6.3 billion tonnes, of which only about 9% has been recycled and 12% incinerated. It was estimated that Asia had the highest rate of production in 2015, producing about half of total global output, with China leading (28%). Though the production is growing exponentially, its disposal is still in infancy, leading to a massive accumulation of plastic on earth.

At present an estimated 150 million tonnes of plastics have accumulated in the world's ocean and by 2050 it has been estimated that oceans might contain more plastics than fish in terms of weight. Sri Lanka sadly was ranked among the top five marine plastic polluters of the world by earthday.org in 2019 with a mismanaged plastic waste of 1.59 million metric tons per year.

Impact of COVID-19 on plastic pollution

Since the COVID-19 pandemic, the forced adherence to a new lifestyle amidst a global lockdown brought one positive outcome, a reduction in global pollution, especially air and water pollution, with air quality index of most countries reaching an unprecedented low value. However, the jubilation of reduced pollution appears to be short-lasting, with a massive increase noted in the use of single use material especially plastics in the fight with COVID-19, now causing a serious negative impact on planetary health.

Most of the increase in plastic pollution is due to demand for products designed to control covid-19, which has increased protective clothing such as masks, visors, gloves and full personal protective equipment, most of which are designed for single use. According to a forecast from Grand View Research, the global disposable-mask market is estimated to grow from \$800m in 2019 to \$166bn in 2020. Furthermore, the global lockdown has led to a dramatic increase in e-commerce, with online purchasing and home deliveries utilizing a massive increase in packaging, which is usually not recycled. Unfortunately, most of the above products and packaging material are made of plastic and polythene. The situation is further worsened by the reduction in recycling at former levels, due to lockdowns, business failure or fear of disease contraction by refuse collection. Moreover, the many years spent

trying to change the public's attitude towards single-use plastic might now be lost, as governments and individuals have more pressing matters, to concentrate on active reduction in the use of plastic. This article outlines the negative impact of pollution on health and physiology, which has worsened due to the COVID pandemic.

How do plastics pollute the environment?

Plastics cause environmental pollution of water, air and soil and have multiple deleterious effects on human health. Plastic disposal as landfill leads to leaching of chemicals, and incineration cause the release of toxic fumes.

Plastic pollution leads to harmful effects in several ways: They release harmful chemicals such as endocrine disrupting bisphenol-A (BPA) and di-(2-ethylhexyl)phthalate (DEHP), brominated flame retardants and antimony trioxide, form microplastic on degeneration (eg. plastic particles <5mm including plastic pieces in the nanoscale < 1 µm in size) especially when plastics decay in water and soil, and burning emit toxic gases such as furans, dioxins and polychlorinated biphenyls to atmosphere. Microplastics in sea water are engulfed by marine animals and in turn enter human food chain in significant amounts.

What are the effects of plastic pollution on normal physiology and health?

Plastics are made of organic polymers and often contain other substances. Unbound chemicals such as BPA and phthalates can leak out during their use, and other chemicals may be released during plastic degradation and disposal. A summary of their adverse effects are outlined below:

Endocrine-disrupters BPA and phthalates

BPA and phthalates are endocrine-disruptors having weak estrogenic properties, competing with endogenous steroid hormones binding to receptors. Bisphenol A (BPA) and phthalates both cause epigenetic changes, influencing DNA methylation, histone modification, and expression of non-coding RNAs, which may persist throughout life. Effects of BPA and phthalate exposure have been extensively reviewed, revealing adverse effects on human and animal exposure.

BPA is a serious culprit responsible for adverse effects as it is used in a wide variety of commonly used products, eg. plastic containers (eg. baby bottle, lining of metal cans for food and beverages), dental sealants and composites used for filling, thermal paper in cash register receipts and a plasticizer increasing flexibility of polyvinyl chloride (PVC) products. Human exposure thus mainly occurs through food and drink but also through skin.

BPA can bind weakly to estrogen receptors ESR1 and ESR2, and was used earlier as estrogen replacement for women. Exposure during fetal life and early childhood is especially harmful, causing changes in development of secondary sexual characteristics and neurobehavioral alterations. High blood levels have been associated with impaired health and endometrial hyperplasia in women. Plastic components are studied as potential obesogens, as BPA has been associated with obesity in women, children and adolescents.

Exposure to phthalates mainly occurs through foods, due to phthalates being used in wrapping materials and food processing. In humans, prenatal exposure to phthalates was significantly associated with dysmorphic disorders of the genital tract in male infants. Phthalate exposure in rats was associated with developmental and reproductive toxicities, eg. including cryptorchidism, hypospadias and low sperm counts. Neoplastic changes in prostate and breast too have been noted in animal studies.

Other toxic substances

Burning of plastic waste release toxic compounds which can damage exposed surfaces such as eyes and mucous membranes, precipitate skin rashes, aggravate respiratory diseases (eg. asthma and emphysema), cause nausea, headaches, and have effects on nervous system and increase the risk of heart disease. Even a single exposure to these toxic fumes can worsen chronic lung diseases such as asthma and chronic obstructive pulmonary disease.

Dioxins released to air later settle on plants, soil and water, from where they enter the food chain. Dioxins are the lethal persistent organic pollutants, which include the highly toxic 2,3,7,8 tetrachlorodibenzo-p-dioxin (agent orange), known to cause malignancy and neurological damage and disruption of reproductive thyroid and respiratory systems. Dioxins and polycyclic aromatic hydrocarbons (PAH's) are highly mutagenic and are carcinogenic.

Soot and solid residue ash resulting from burning plastic waste also contain volatile organic compounds (VOCs), semi-VOCs, particulate bound heavy metals and polychlorinated dibenzofurans (PCDF's) which enter our food chain. Benzene in VOC's is a known carcinogen and released during plastic combustion. High concentration of persistent free radicals in the soot and the solid residual ash cause damage to the respiratory system..

Polyvinyl chloride contains (PVC) chlorine which can be released during burning as hydrochloric acid, and causes damage to the respiratory epithelium in high concentrations. PVC is polymerized from vinyl chloride (VC) monomer which is a well-established carcinogen strongly associated with liver malignancies. Polystyrene is harmful to central nervous system and brominated compounds act as carcinogens and mutagens. Other additives used as heat stabilizers, frequently contain heavy metals such as barium, lead and cadmium, causing deleterious effects on multiple body systems.

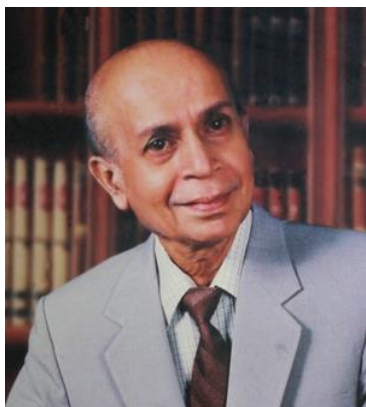
Conclusion

Only few of the most important adverse effects of plastics have been highlighted in this article, which include serious deleterious effects on human and animal health. These include epigenetic modifications which lead to neurobehavioural effects, sexual and reproductive abnormalities, diseases of respiratory system, skin and other multisystem effects as well as more serious mutagenic effects and carcinogenesis. Exposure occurs mainly via food chain but also via inhalation and dermal contact. Prenatal or early childhood exposure leads to worse outcomes, and reducing the use of plastic is the best method of reducing plastic pollution. At a time, when COVID-19 is predicted to cause a massive increase in the use of plastic products, a sustainable step towards tomorrow's cleaner and healthier environment needs immediate attention of policy planners, scientists, health workers as well as the general public, in an active effort to reduce the use of plastics and find practical alternatives while instilling an attitudinal change.

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Commemoration of a legend: Professor Carlo Fonseka (1933-2019)



A great personality we miss in the field of Physiology: Professor Carlo Fonseka

A tribute by Dr Indu Nanayakkara, Senior Lecturer, Faculty of Medicine, University of Peradeniya published in the Island newspaper to coincide with his First death anniversary on 02nd September 2020

At the first death anniversary of Professor Carlo Fonseka, I would like to bring the focus of the reader to the legacy of our beloved professor through his services to learning and research in the field of Physiology and Medicine, to university education, and more generally to the Sri Lankan nation. Apart from his contribution made to a wide variety of fields, he also led an exemplary life which, in my understanding, epitomised the qualities of mettā, karunā, mudithā and upēkkhathe teachings of Lord Buddha. It is a well-known fact that in the early stages of his university career Carlo Fonseka was a committed socialist, and a prominent activist of the 'Lanka Sama Samaja Party'. He also proclaimed that he is a 'Rationalist'.

'Rationalism' has many definitions and interpretations. Quite often, it is misunderstood as an ideology that rejects all religious beliefs and devotional practices. But if one were to read Professor Fonseka's compositions in the volume titled 'Essays of a Lifetime', it becomes clear that 'Rationalism', as professed by him, represented the basic principle in scientific endeavours according to which, in generating knowledge, 'Reason' is superior to emotion and to objectively unverifiable perception.

As most of us are aware that there is no dearth of writings on Professor Fonseka published both before as well as after his passing away. In view of that, there is hardly any need to repeat the glittering details documented on of his academic achievements. However, I shall briefly outline that Professor Carlo Fonseka obtained MBBS with first class honours at the University of Ceylon in 1960; and was awarded the Andrew Caldecott Gold medal for the greatest competence in that examination, Maneckbai Dadabhoy Gold medal (for the greatest competence in Obstetrics and Gynaecology, Perry Exhibition "for the greatest competence in a 3 -year period, Distinctions in Surgery, Obstetrics and Gynaecology, Pharmacology and Forensic medicine. His studies leading to the MBBS degree were embellished with many such distinctions and prestigious awards which, I think, only a very few in the entire history of the Medical School in Colombo could have matched. He obtained his PhD from the University of Edinburgh. His doctoral thesis work has been even quoted in textbooks of Physiology.

He joined the academic staff of the Department of Physiology of the University of Colombo in 1962 and rose steadily in rank, gaining recognition here and abroad as a brilliant researcher and an inspiring teacher, to be elevated to a professorship in Physiology. Later he moved to the newly established Faculty of Medicine, Ragama, as its founder Dean and the persons who was instrumental in developing the Faculty to take wing. He authored many widely acclaimed publications in his field, focusing on specialties such as neuroendocrinology, pain and memory. The Master's degree in Medical Education was obtained much later in life (1999) underscoring his positive attitude towards learning throughout his life.

He was a great teacher in Physiology and had a passion to instill knowledge in his students. His students at Colombo and later at Kelaniya had almost worshipful admiration and affection for him. One of his pupil admirers has stated that his name 'Carlo' should be regarded as an abridgement of the Sinhala term 'Kālōchitha' – an interesting statement!

Outside the confines of teaching, research and academic administration, he continued to maintain a refined level of interest and involvement throughout his career in a wide variety of issues. For instance, a book authored by him has a focus on the vital necessity of promoting peace and inter-group harmony in order to alleviate poverty, and achieve equity and social justice in Sri Lanka.

He was an ardent campaigner for eliminating narcotic and tobacco consumption, and provided his fullest cooperation and leadership to the related government efforts, regardless of the political party affiliations of those who required his services.

When entrusted responsibilities in academic administration, he never became a 'yes' man of political bosses. He was guided entirely by his own convictions, even when his steadfast stand caused displeasure among the powers that be.

We have often seen that he associated with the glitterati of our performing arts in theatre, cinema and music, but not with the objective of pursuing the limelight. That association was due entirely to the elite performers in those fields pursuing him because he had the competence to contribute to their interests and aspirations.

I find it difficult to think of any other person in our university community whose record could match his versatility and competence in such a broad spectrum of fields. Yet, he interacted in perfect ease with those at all levels of our society, including rural youth, not as a 'pundit' distributing wisdom or a political bigwig harvesting votes, but as a friend expecting to engage in a dialogue.

This latter feature of Professor Fonseka's personality is reflected in a story of a visit by him to a village in Puttalam District, invited for a speech by an association of youth, mainly school drop-outs and students of upper-secondary level at a Central College. That was in the gloomy aftermath of the youth insurrection of 1971. As previously arranged, on arrival at the railway station that morning, he was respectfully greeted and escorted to the venue of the meeting in a procession of bicycles, with the illustrious 'doctor' himself garlanded, and seated on the cross-bar of the lead bicycle, motor vehicles in that era being far less abundant compared to the present. The social setting was one of mixed ethnicity. His audience, overwhelmingly young men and women, consisted of Buddhists, Roman Catholics and Muslims, including members of the clergy. According to this tale, they listened to the speech with rapt attention, and participated in a lively discussion that lasted until mid-day. What impressed the narrator of this story more than all else was the calm, respectful and persuasive manner in which the eminent 'doctor' responded to even those who disagreed with some of his ideas. He had lunch with his hosts, further informal chats, and was escorted back to the Railway station, demonstrating to a small segment of our society that the barriers of the 'Ivory Tower' are not entirely insurmountable.

That was a rare and exemplary dimension of Professor Fonseka's personality the ability to "walk with kings, but not lose the common touch", a character trait of the ideal 'Man' as portrayed by the famous poet Rudyard Kipling.

On a personal note, he was a very dear senior colleague to me. The guidance, inspiration and the benevolence he bestowed on us Physiologists will remain among us for many years to come.....

A Tribute to an Asian Physiology Giant



Prof Arif Siddiqi (1st April 1948 – May 2020)



The author Professor Mangala Gunatilake chairing a session at the Teaching workshop of the 3rd SAAP Conference at the Faculty of Medicine, University of Colombo

It was in 2001 where I met this physiology legend for the first time at the IUPS pre-conference teaching workshop held in Lincoln, New Zealand and my last meeting with him was in March 2019 at the FAOPS pre-conference teaching workshop and the conference held in Kobe, Japan. We met approximately every 2 years to share our teaching and research experiences in physiology at the IUPS, FAOPS, or SAAP platforms.

Prof Arif Siddiqi having born on 1st April 1948 in Karachi, obtained his basic degree in Biological Sciences with Honours in 1970 and subsequently qualified with a Master of Science in Male Reproductive Endocrinology in 1972, from University of Karachi, Karachi. Because of his interest in acquiring new knowledge, he engaged in research to obtain his Master of Philosophy degree in the field of Reproductive Physiology from Quaid-e-Azam University, Islamabad in 1976. Prof Arif Siddiqi obtained his Doctor of Philosophy in Reproductive Neuroendocrinology from the University of Glasgow, United Kingdom in 1986.

His interest in serving the motherland made him return to Pakistan upon completion of his Ph.D and engaged in teaching and research in Aga Khan University, Karachi and Islamic International Medical College, Riphah International University, Islamabad. In addition, he extended his services and also engaged in research in Karolinska Institute, Stockholm, St George's Hospital Medical School, London. He was recognized over his leadership skills by appointing him as the Associate Dean at the Riphah International University, Islamabad for 5 years, until his appointment as the Vice-Chancellor at the Barrett Hodgson University, Karachi for 4 years.

He was a good writer and authored several books on Medical/Physiology education. He has many research publications in accredited journals. He was an editorial board member in the Advances in Physiology Education Journal published by the American Physiological Society and served as the Editor-in-Chief in the same journal at the time of his death. On his invitation, I joined the Advances in Physiology Education journal review team. He was very clever in identifying the capabilities and willingness of people around him. He created opportunities in several occasions for me to mold my career as an academic. Furthermore, as the Chair of the Education Commission of FAOPS, he included me as a member of the Education Commission. He had initiated a programme to collect information on physiology education and research from member countries for which he obtained views of the Commission members. His aim was to initiate more work for the benefit of others and even during his illness, he continued to do so. However, due to his untimely death, he could not fulfill his role as the Chair of the FAOPS Education Commission upon his appointment as the Chair in 2019. Also, as a long-standing member of the FAOPS Council he supported my initiatives by convincing the FAOPS administration, to enroll the Physiological Society of Sri Lanka as a full member of the FAOPS.

Prof Arif was the Founder of the South Asian Association of Physiologists and organized the 1st SAAP Conference in 2008 in Pakistan. As the Founder he had high expectations on SAAP. He was the Founder Secretary-General and served in this position for several years. He had to provide justification for the establishment of SAAP at the FAOPS Council meeting held in Taipei, Taiwan in 2011. He was a bit disturbed and discussed this with me at the venue after the meeting. Later, FAOPS also recognized his attempt in establishing SAAP. One of his main concerns on SAAP was the delay in registration of SAAP in Sri Lanka. We could not fulfill his dream as several member countries were not in a position to submit the required documents. He attempted to expedite this matter many times in many ways. Prof Arif would have been the happiest person overhearing the news on registering Bangladesh Physiological Society as a professional body in Bangladesh in recent times. At the last informal meeting he had with me and two others in Kobe, Japan he discussed SAAP activities/progress and issues. Prof Arif was the SAAP President at the time of his death. He was a member of the IUPS Council too since 1993 and he was able to organize several IUPS supported workshops during SAAP conferences including the IUPS Teaching workshop held in conjunction with the 3rd SAAP conference in Colombo, Sri Lanka in 2012. This workshop provided me another opportunity to closely work with him during the organization. My last WhatsApp conversation with him was exactly 1-month before his death. He had a lively conversation enduring his pain and his concerns were over SAAP registration and the 7th SAAP Conference to be organized in India.

As a senior physiologist Prof Arif Siddiqui was a well-known figure among physiologists at the global level. He was a good teacher, researcher, and administrator, the qualities that a university academic should possess. For junior physiologists, he was a dear mentor and he was greatly respected by physiologists. Above all, he was a simple and humble human being with good ethical conduct. He did

not like to accept 'no or cannot' as an answer for an activity. He was positive and he wanted his colleagues/friends to work with a positive attitude at all times. Since the first meeting in 2001, we continued our friendship until his untimely death on 15th May 2020. He will always be remembered by the physiology family!

May His Soul Rest in Peace!

Professor Mangala Gunatilake
Department of Physiology, Faculty of Medicine, University of Colombo



Attentively listening to the author's introduction at the First IUPS supported Teaching workshop at the 3rd SAAP Conference at the Faculty of Medicine, University of Colombo



At the Inauguration of the 3rd SAAP Conference at Taj Samudra



Professor Siddique addressing the participants as the Secretary-General of SAAP at the teaching workshop at the 3rd SAAP Conference at the Faculty of Medicine, University of Colombo

The new normal: Physiology teaching-learning activities during the COVID 19 pandemic

University of Peradeniya

It is interesting to note that at a time of a global pandemic the teaching and learning activities continued to happen in our faculty as is the case with many other educational institutes. It is common knowledge that university education in Sri Lanka continues to get disrupted at varying intervals due to political, social or security reasons. All negative activities that rocks and shakes the country as a whole, trickles down to the universities and throws public higher education system into turmoil.

Amidst the COVID pandemic the Faculty of Medicine at Peradeniya undertook to conduct all lectures online, using either the synchronous or asynchronous mode. In physiology teaching, inquiries were made at the beginning to gather information from the students as to their accessibility to the internet. Thereafter, the department decided to conduct the lectures in the form of PowerPoint presentations with narrations in the asynchronous mode. Lectures conducted through the synchronous mode using the zoom platform was not undertaken as students were not very comfortable with their accessibility to the internet. Small group discussion questions were posted and the students were requested to upload their answers before a deadline. All the answers were assessed and marked with feedback being sent to all students. At the end of the semester, a round up discussion of the questions posted along with a forum for posting any queries the students had was conducted by a senior academic which was very popular with the students. All practical classes that remained to be completed were also conducted through zoom as demonstrations which were also open to students for their questions.

The use of online teaching and learning has not been limited to sessions conducted by academic staff of Physiology as I have gathered from the students. There is a large amount of peer learning going on amongst students in this respect especially as the exams are coming up. In this respect, the students, I am sure, are way ahead of us as they embrace systems based on modern technology with open arms. All this is proof that teaching via the web is a useful platform for teaching of physiology irrespective of the presence of a pandemic or not.

Dr. Indu Nanayakkara

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University of Kelaniya

The Faculty of Medicine, University of Kelaniya has a Learning Management System termed CAL for the purpose of online teaching and from the 24th of March the Information and Communication Technology Centre, University of Kelaniya advised the student and the academic staff to use the platform to minimize the disruption to the courses taught by the faculty of Medicine, University of Kelaniya. The support for the task was provided by the Information and Communication Technology Centre of the University of Kelaniya by integrating Zoom to CAL which enabled staff to conduct live lecturer sessions and meetings. The facility to record the sessions was also enabled when using Zoom. The department of Medical Education and the computer centre of the faculty were in the frontline facilitating an easy transition from onsite to online learning. Thus far we have been able to teach two-degree programs.

The Phase I of the MBBS degree had two batches enrolled in the program. We were able to deliver the Lectures and conduct tutorials via the CAL. It also enabled interactive learning via tutorials conducted via Zoom and quizzes formulated on Moodle platform to give feed back to the students. The student feedback was overwhelmingly positive for the dubbed lectures uploaded to the CAL. They appreciated the efforts by the academic staff of the department. The quizzes made the learning more interesting as it did not let the students passively read but be engaged with the content and reflect on important principles and facts.

We had recorded videos previously for some of the practical and we were able to use them to introduce the practicals to the students. An onsite demonstration of the same practicals are to be conducted when the students can return to the laboratories for learning. We also made use of the clinical examination videos recorded by the clinical departments and sourced material available online and recommended links which were appropriate.

The modules we were able to teach online so far are

1. Urinary System
2. Blood, Lymph and Immune System
3. Cardio-Respiratory System

The next modules to be taught online are

1. Alimentary System
2. Endocrine System
3. Reproductive System

The students enrolled in BSc in speech and hearing sciences was also taught most of the physiology lectures in the course through the CAL.

The Information and Communication Technology Centre, University of Kelaniya conducted a session where the staff were educated on conducting zoom meetings and tutorials. The session was very informative and they computer centre along with the ICT centre at Kelaniya continued to provide support to the staff members through the transition. The online resources were extremely helpful as we strived to learn the most efficient ways to deliver the lectures at the initiation of the transfer to online learning. The many videos available on dubbing power point lectures and editing the sounds on the power point made the transition smoother.

The department distribute the lecture hours equally, to minimize burdening one individual with a series of lectures. We got feedback from each other at the department by reviewing the dubbed lectures and developed a pathway to get feedback from the students through the department of Medical education. The modules are continuously being evaluated through the Department of Medical Education and feedback is requested from the students through an online form.

The limitations we faced were that some students did not have access to computers and internet facilities from their homes and even some of the academic staff members had to face limitations with connectivity. We are not able to assess the efficiency of delivery of learning material as in a face to face learning session. Although questions by the students are encouraged and we respond to the questions asked via messages that is enabled through CAL we have noticed a drastic drop in the number of questions that we normally get when we deliver lectures and conduct face to face tutorials.

Although we have tried our best to demonstrate the practical sessions it would not be possible to enable the students to get the hands-on experience in clinical examination, venipuncture and simple hematological tests which comprise the practicals of the modules conducted thus on the online platform.

The grounds of the university have been abandoned to the flora and the few fauna. To reestablish the energetic and enthusiastic learning environment, we would need the young and energetic students to step in through the threshold and roam the grounds of the faculty.

Dr Tania Warnakulasuriya

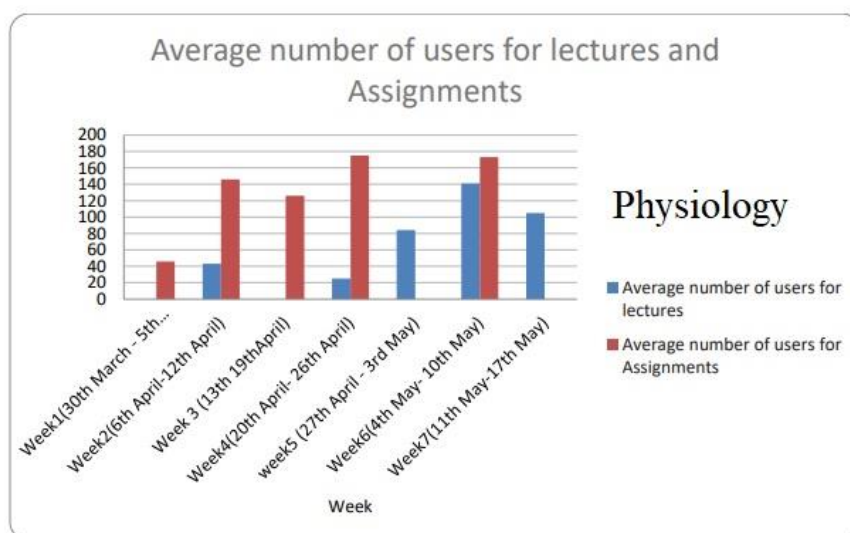
Department of Physiology, Faculty of Medicine, University of Kelaniya

Faculty of Medical Sciences, University of Rajarata

Since the COVID-19 pandemic rendered social distancing mandatory, we have realised the importance of adapting to online teaching methods. At the beginning, it was a challenge to most of us since we are used to deliver lectures to the undergraduates face to face, at conventional lecture halls. Therefore, it motivated us to find out means of online teaching that can be delivered effectively to our students, increasing their active participation.

We initially decided to use LMS (Learning Management Systems) which was already established in Sri Lankan Universities by the UGC and therefore, we were able to upload mainly the lecture hands outs in the form of PowerPoint presentations followed by assignments to draw the student participation towards online teaching. Meanwhile, we received the students' feedback on our online teachings process. Their main concern was the lack of audio-visual mechanisms to draw their attention effectively. With time, we tried to build up audio visual mechanisms that can be combined with our lectures to deliver them actively, for example; audio and video recorded PowerPoint presentations directly uploaded to LMS, and in some instance to YouTube. Further, we introduced the ZOOM-conferencing system which can be effectively used for online face to face teaching with the live participation of students. With the introduction of ZOOM, first we tried to deliver video recorded ZOOM lectures uploaded directly to LMS. One of the advantages of ZOOM is while presenting the contents of PowerPoint slides, the white board facility can be used to describe difficult areas with live drawings in a similar manner we use the OHP in our conventional lecture halls.

With the introduction of audio-visual combined lectures, faculty statistics showed increased number of participation of students in online teaching activities as shown in graph below (Upward trend for participation in lectures).



Since this is a continuous process of getting new experience, we hope in future we will be able to successfully deliver live zoom lectures in a face to face manner with the active participation of students, when they are able to fulfil the need of adequate internet facilities in their home environment, which can be identified as an essential requirement for live ZOOM lectures for a higher number participants. Other shortcomings are that we were still not able to deliver practical classes with the demonstrations due to inadequate audio visual facilities and therefore, we are now working on getting them (video cameras, soundproof recording room and technical support in video editing). Further, we are still in the process of thinking to develop online assessment methods instead of traditional exams procedures.

The support extended by University administration who provided us ZOOM facility free of charge, the computer instructors who made the LMS facility effectively available, the Prof S Agampodi who conducted a series of instruction sessions on online teaching and Dr Wasana Jayaratne who collected and provided student feedback and faculty statistics is remembered with gratitude.

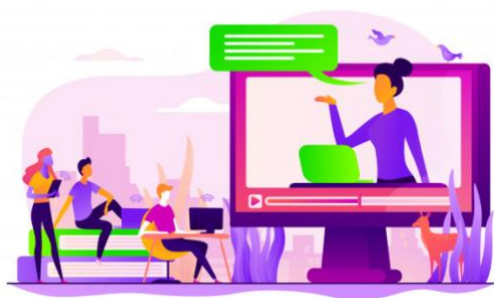
Dr Manori Adikari

Department of Physiology, Faculty of Medicine & Allied Sciences, Rajarata University of Sri Lanka

University of Wayamba

With the outbreak of the novel corona virus “Covid-19”, the universities all across the globe brace for lasting impact. Universities face the prospect of losing an entire semester or even more. As the in-person teaching came to a halt with the implementation of the new safety precautions, there had been an exponential rise in in-corporation of online teaching and learning strategies to ensure that the learning opportunities of the undergraduates are still preserved during and following the pandemic.

The Faculty of Medicine, Wayamba University of Sri Lanka ; as a budding medical faculty in the country is taking its utmost effort in producing highly skilled, socially accountable health care professionals with the highest standards and commitment towards advancement of the discipline in a culture that supports diversity, inclusion, critical thinking and creativity. With the hope of accomplishment of its vision, despite the unexpected Covid 19 Pandemic, the faculty widened the horizons of e- learning which had been present ever since the pre- pandemic period.



Keeping the doors of learning open during COVID 19

The faculty has enhanced the use of online teaching and learning platforms ever since the dawn of the Pandemic. Virtual classrooms were created with the use of Zoom application. Emphasizing the importance of “voice” in teaching, few of the lectures were uploaded to the learning management system (LMS) as audio version of the power point presentations. Regular evaluation of the teaching learning process was done via quizzes and tutorials uploaded on the LMS. Students were given the opportunity of clearing their doubts in the chat rooms held on the LMS. In addition links to educational videos were also provided.

Although this digital learning and teaching process has its own pros and cons, we noticed that the participation of the students was almost 100% except for some of the Zoom related lectures and there was a significant reduction in the reluctance of the students to pose questions during lectures as in in-person teaching.

Nevertheless we have been able to address the issues faced by the students in reaching the online platforms. The lectures held through Zoom were recorded and uploaded to LMS to facilitate the learning process of those students to be viewed later when it's feasible for them. Furthermore steps were taken to relieve the anxiety among the undergraduates due to the sudden migration of in person teaching to online teaching in order to ensure that they actively and effectively participate in online learning.

The online teaching learning activities are not confined to subject teaching, but there were weekly slot allocated for distance mode monitoring in the timetable. During that time and also via the student coordinators, an informal feedback on online teaching was continuously sought and adjusted the ongoing program accordingly to get the best out of this online platform.

Dr Nayomi Ranatunge

Department of Physiology, Faculty of Medicine, University of Wayamba

Achievements



Prof. Sudheera Kalupahana from the Department of Physiology at University of Peradeniya was awarded a National Fellowship by SCOPE (the Strategic Centre for Obesity Professional Education) of the World Obesity Federation".

The official announcement is in the following link:

<https://www.worldobesity.org/news/professor-nishan-sudheera-kalupahana-awarded-scope-national-fellowship>



Dr Tania Warnakulasuriya of the Department of Physiology, Faculty of Medicine, University of Kelaniya was awarded the Commonwealth Medical Fellowship 2018 to train in Autonomic Function Assessment at the National Hospital for Neurology and Neurosurgery, London, United Kingdom from 14th December 2019 to 2nd May 2020.

Appointments



Professor Mangala Gunatilake was appointed as a member of the Review Team of the Advances of Physiology Education Journal published by the American Physiological Society.



Professor Tharaka Dassanayake was appointed as head of the department of Physiology, Faculty of medicine, University of Peradeniya from April 2020 for 3 years.



Dr Amaranath Karunanayake was appointed as head of the department of Physiology, Faculty of medicine, University of Ruhuna for 3 years.

Memorable experiences of overseas training, airtravel and quarantine during COVID – 19 times

Can we fight COVID-19 without animal testing and who is taking the risk?

Professor Mangala Gunatilake, Department of Physiology, Faculty of Medicine, University of Colombo

Use of animals as models for human has contributed immensely for the development of medicine from the inception as indicated in the 1st Medical handbook '*Corpus Hippocraticum*' published around 400 B.C. As the Greek and Roman Physicians were unaware of the structure and function of the human body, initially vivisections and experiments using live animals were carried out for understanding of human anatomy and physiology. With the development of different branches of medicine at the initial time periods and also during the time of French Physiologist, Claude Bernard (1813 to 1864) who is considered as the father of Experimental Physiology, use of animals in medicine related work were further enhanced.

In many instances, in order to explain the underline physiological principles, related animal experiments are quoted with the data in the recommended physiology textbooks such as Ganong's Review of Medical Physiology and Guyton & Hall Textbook of Medical Physiology. These examples provide ample evidence of contribution by animals for the development of medicine.

I conducted *in-vivo* and *ex-vivo* animal experiments for my PhD studies from 1994 to 1998. Although, I conducted laboratory animal-based experiments, this field was not a well-recognized field in the country until about 2009. Development of ethical guidelines for the animal experiments, initiation of laboratory animal science (LAS) education, establishment of the Sri Lanka Association for LAS, designing ethically sound animal-based research contributed for the development of LAS in the country. However, our country is far behind compared to many countries in relation to achievements and developments in this field. A person engaged as a LAS educator, I was interested in acquiring new knowledge and skills in the field. I was lucky enough to be selected for a scholarship offered by the International Council for Laboratory Animal Science and a bursary by the Laboratory Animals Limited, UK and to enroll as an MSc student at the International Academy of Aachen University, Germany in 2018. I completed three semesters of learning.

Amidst the COVID-19 outbreak in several countries including Germany, I flew to Dusseldorf airport on 4th March 2020 in order to undergo 10-day training (compulsory attendance block) and to complete 3rd semester examinations. Upon my entry to the Institute of laboratory Animal Science located at the Aachen University Hospital, I learnt that corona infected patients were being treated in the Aachen university hospital. Other than myself, the other students in the MSc programme were not at all bothered about recent outbreak of corona in Heinsberg,

Germany. Most did not wear masks. Furthermore, during lunch interval hospital staff, students and teaching staff gathered at the canteen to enjoy lunch. However, hand hygiene was assured at every point with freely available hand sanitizers. I too followed the others without wearing a mask.

With the increasing incidence of COVID-19 cases around the globe, Sri Lanka too imposed control measures. I was able to return to country after completing scheduled activities of the MSc course, and underwent quarantine at the Quarantine Centre at Punani, Batticaloa for 2-weeks which was a new experience.

Scientists and Medical institutions in many countries were interested in developing a vaccine to fight against the virus during the COVID-19 pandemic around the globe. Laboratory animals are used as pre-clinical models for safety and efficacy testing of vaccines and drugs. However, some organizations eg. Understanding Animal Research of UK expressed their concerns in April 2020 over skipping animal trials during the development process of vaccines. Can we fight COVID-19 without animal testing and who is taking the risks? At the same time animal studies provide opportunities to understand the underlying mechanism/s of resistance developed by some animal models (there are mouse models who are resistant to COVID-19).

Commonwealth Medical Fellowship at the Autonomic Unit ,the National Hospital for Neurology and Neurosurgery in London UK.

Dr Tania Warnakulasuriya, *Department of Physiology, Faculty of Medicine, University of Kelaniya*

I was awarded a Commonwealth Medical Fellowship in 2018 by the commonwealth Scholarship Commission and on December 2019 I initiated the fellowship in London United Kingdom. Dr. Ellen Hagen Merete was my supervisor and the Autonomic Unit was headed by the clinical and academic Lead Dr. Valeria Iodice.

I was able to obtain hands on training in Autonomic Function (ANF) Assessment of patients with a variety of Autonomic dysfunctions at the autonomic Unit ,the National Hospital for Neurology and Neurosurgery in London – UK, which is the national center assessing patients with dysautonomia. The patients ranged from pure autonomic failure to postural tachycardia. Alpha synucleinopathies was also seen commonly among the patients referred to the laboratory.

I was able to observe cardio-vagal ANF assessment, thermoregulatory sweat test and dynamic sweat test to name a few. Cardio-vagal ANF assessment included the ANF screen, ANF assessment with meals and exercise. I participated in multidisciplinary team meetings where the management of these patients was discussed. I also participated in the ward rounds where the hospitalized patients were assessed at bed side. I was an observer at the clinics of the Autonomic unit where the patients were initially screened and educated by the autonomic neurologists.

I was a part of the Syncope Clinic, Autonomic Failure clinic and Postural tachycardia clinics where the respective groups of patients were educated on managing their problems in a group session. I was able to work with the nurses and the clinical scientist of the autonomic unit and observe their approach to each individual patient. They were a very cosmopolitan group of enthusiastic people who were a pleasure to work with. They were very accommodating and keen to transfer their experience to me with in the few months I got to spend observing them. I was given the opportunity to visit the uro-neurology, gastro-neurology and ophthalmology units of the National Hospital for Neurology and Neurosurgery. One of the most memorable experiences was the urethral sphincter EMC where the hyperreactivity of the sphincter was observed by the presence of a 'whale song' during the EMG.

I was also able to take part in the Gower rounds, a neurology education program at the National Hospital for Neurology and Neurosurgery for post graduate trainees. It is named for the Neurologist Sir William Richard Gowers who worked at the hospital until his retirement and described the Gower sign among many neurological observations he published. I was also able to take part in many CPD sessions at the hospital, Royal college of Physicians in UK, British Medical association, and Royal college of Medicine.

The Royal College of Physicians had an exhibition on Sir. William Osler where one of the first copies of *Anatomica De Motu Cordis* by Sir. William Harvey (which was owned and donated by Sir William Osler) was on display and that was a thrill to the medicine geek in me. Another quirky finding was a traditional Sothorn Kolum mask from Sri Lanka being on display at the Wellcome Collection in London.

I was able to enjoy the sights and sounds of London during the 4 months I spent as a fellow and enjoyed the food, theater and the shopping London had to offer. I was able to visit the museums and enjoyed the national art gallery the most and would recommend it for all travelers who visit London.

I thought I might add a few words about the experience I had with the COVID-19 pandemic as well. I remember comparing my self to Edward Baldwin in 'For all mankind' who was stuck on the moon with no avenue to return. That was me being stuck in London for more than a month with most of the world's airports being closed and most airlines grounded. The staff at the Autonomic Unit were the most supportive team I could have worked with at that time. My supervisor made sure I got the benefit of the added month of fellowship and compelled me to report to duty for all the available meetings and clinics. She and the senior staff took me under their wings and made sure I did not take a dive off the emotional abyss.

In addition, I was fortunate that I could assist with the move to online teaching at the department of Physiology of the University of Kelaniya. I was able to work remotely and hear the comforting words of the members of the department when we gathered for department meetings via zoom from early April. The mandatory quarantine was a daunting event to anticipate and my autonomic functions were deranged when I left Heathrow to embrace the unknown.

It was a unique experience where it felt like a time specified for meditation and recollection. With ample time for reading of non-academic books which was cherished very much, I was able to catch up on dubbing lectures in physiology and making online quizzes for the students of the faculty. I was adamant that I should pay back for my absence from the department. The three of the most supportive mentors I know, did not blink when I announced my long absence but encouraged me to pursue the prestigious opportunity. I would forever be in their debt for the support extended toward me and my family.

The only downside of the quarantine was that I was not able to reunite with my family for a longer period of time than anticipated, which made my 9 month old develop some what of a stranger fear towards me, who left her in the care of the grannies and nannies and the world's best husband at just 4 and a half months. The reunion thus was more joyous as the 2 older kids flew to my arms (after I was cleared as COVID negative with a PCR test).

The house arrest we had to endure on my return made us have the most cherished 14 days. Although I am ever thankful for the freeware plat-forms that allowed me to keeping up with the Siriwardena s during my fellowship and quarentine, it was one of the greatest sacrifices I have had to make in the name of Medicine.

International Events

This year the annual Physiology Quiz held in Malaya was replaced by the Physiology Comic Challenge 2020



COMIC CHALLENGE 2020


<p>General Information</p> <ol style="list-style-type: none"> 1. Each University can send in 2 submissions. 2. Judging will be done according to <ol style="list-style-type: none"> a. the creative art b. the physiology content c. the humour 3. Results of the Physiology Comic competition will be announced on 26th August 2020, the 'coronated' day of 18th IMSPQ. 4. Cash prizes will be given to the top 3 winners. <ul style="list-style-type: none"> 1st USD 300.00 2nd USD 200.00 3rd USD 100.00 5. All submissions will receive electronic certificate of participation and the first three Winners will also be given their Winning Certificates. 6. The comics will be compiled by the 18th IMSPQ committee and the e-book of Physiology Comics will be sent to all participating Universities. 	<p>Instructions for participants</p> <ol style="list-style-type: none"> 1. The Comic can be three to eight panels as seen in our daily newspaper comic strips. 2. File should be submitted in image file format (max file size 30 MB), with image resolution not less than 300 PPI. Recommended file in A4 size. 3. A Legend (less than 100 words) should be included to elaborate on the Physiology of the Comic. 4. Submissions can be done via: <ul style="list-style-type: none"> https://forms.gle/htxFWQx8372taWk OR Fill in the registration form and send together with the comic to umephiology@gmail.com. 5. Deadline for submission is 31st July 2020.
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 **UNIVERSITI MALAYA**

The Society for Physiology


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Editor
Physiological Society of Sri Lanka

Cover image In reference to our featured article: increased plastic use in the times of COVID 19
