

## Abstracts of the Third Biennial International Scientific Conference of the Faculty of Medicine and Health Sciences, Universiti Tunku Abdul Rahman, Sungai Long, Malaysia held on 22 – 26 November 2021

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### PLENARY

#### Plenary 01 Advanced therapeutic medicinal products in a post-pandemic world

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University of Sydney, Australia

Advanced therapeutic medicinal products based on Gene and Stem Cell Therapy are increasingly being approved throughout the world. Immunotherapies including checkpoint inhibitors and CAR-T cells have captured the attention of many scientists, physicians and cancer sufferers. The convergence of substantial incremental technical advances towards combined cell and gene therapy has improved clinical outcomes in immune deficiencies, haemoglobinopathies, blindness, immunotherapies and other inherited diseases. There is a pressing need to standardize cell manufacturing protocols for widespread clinical testing in the regenerative medicine field. Strict compliance with government regulation and oversight is essential to maintain the safety of all therapeutic products.

We recently completed the first trial of iPSC-derived Mesenchymal stromal cells in Steroid-Resistant Acute GvHD. MSCs have been widely investigated as a treatment for graft versus host disease (GvHD) but with mixed results. Factors such as MSC donor variability and the effects of prolonged culture expansion may contribute to inconsistent or disappointing outcomes. Using clonogenic progenitor-based technology, the novel Cymerus™ manufacturing process facilitates virtually limitless production of well-defined and consistent MSCs from a single human iPSC bank. This avoids inter-donor variabilities, batch-to-batch variation and the need for prolonged *in vitro* expansion of MSCs. We have conducted a multi-centre, open-label study of Cymerus MSCs (CYP-001) in adults with steroid-resistant acute GvHD. The primary objective was to assess safety and tolerability, while the secondary objective was efficacy, based on the best responses by Day 28/Day 100 and overall survival. It is the first completed study worldwide with any iPSC-derived product. It has yielded encouraging safety and efficacy data, which support further clinical development of Cymerus iPSC-derived MSCs for GvHD and other indications.

The use of iPSC-derived MSCs may overcome scalability and manufacturing consistency challenges that have impaired the development of these cells for clinical trials in diverse diseases, including COVID-19. In addition, we have targeted the SARS COV-2 virus spike protein using a monoclonal antibody in a Global Phase 2, Randomized, Double-Blind, Placebo-Controlled Study. Such investigational drug products may be useful in ensuring the safety of patients and staff at high risk of exposure - as pre-or post-exposure prophylaxis - in a post-pandemic world.

#### Plenary 02 Malaysian COVID-19 vaccination strategy

Yasmin A. Malik  
University of Malaya Medical Centre

Ever since the first case of COVID-19 was reported in Malaysia on 4 February 2020, Malaysia began the vaccine strategy with an integrated and structured approach to vaccine access and acquisition by April 2020. On 13 November 2020, Malaysia officially signed on to the COVAX Facility, thereby guaranteeing the supply of vaccines for 10% of those living in Malaysia.

By February 2021, Malaysia secured 66.7 million doses of COVID--19 vaccines through the COVAX Facility and advanced purchases from five vaccine manufacturers. They all obtained conditional approval from the Drug Control Authority (DCA) and the National Pharmaceutical Regulatory Agency (NPRA). Since then, an additional vaccine was given conditional approval for use in Malaysia. Equitable access was also ensured by providing free vaccination voluntarily to all those living in Malaysia (citizens and non-citizens).

Malaysia followed the WHO recommendation to conduct stepwise targeted vaccination across age groups; initially with the older adults, front liners, especially the health workers, and high-risk groups of all ages; then extended to include the rest of the adults; followed by adolescents. The vaccination programme began in early March 2021. The process to vaccinate all children aged between 12 to 17 years began in mid-September. By 9 October, the Covid-19 Vaccine Supply Access Guarantee Special Committee reported that 89.4% of Malaysia's adult population had been fully vaccinated against COVID-19. This is ahead of the Malaysian Government's initial plan to fully vaccinate at least 80% of the adult population by February 2022.

In October 2021, WHO has recommended an expanded vaccination goal of fully vaccinating at least 70% of the world's population by mid-2022. Malaysia should be able to achieve this much earlier since, as of 9 October 2021, 64.6% of the population in Malaysia has been fully vaccinated. Plans to give booster shots for the elderly and those with comorbidities will also be implemented in Malaysia.

In anticipation of addressing the risk of exposure to other pandemics, the Malaysian Government, through the National Science Council, has agreed that the National Vaccine Development Roadmap be drafted as a long-term plan for Malaysia to manufacture vaccines locally.

**Plenary 03 Haemostatic problems related to Covid-19 infection and vaccination**

Nurasyikin Yusof  
Universiti Kebangsaan Malaysia

COVID-19 has emerged as a pandemic worldwide since 2019. The SARS-COV19 affecting primarily the lungs and the associated haemostatic system abnormalities has been observed in patients with COVID-19 with the tendency towards a prothrombotic state. The pathogenesis differs from disseminated intravascular coagulation with mainly towards primary pulmonary localization. This is referred to as pulmonary intravascular coagulopathy with strong component of thrombo-inflammation. This is reflected in the lab tests with an increase in D-dimer, the level of which correlates with severity and outcomes of the disease. The basic coagulation tests such as prothrombin time (PT), activated partial thromboplastin time (APTT) are only mildly prolonged while most patients have normal to increased fibrinogen and marginal thrombocytopenia. Overall, the patients have an increase in venous and arterial thrombotic events especially in ICU patients. Bleeding is uncommon and treated with blood products transfusion. The behaviour of this infection in terms of clinical presentation and haemostatic and other biochemical results differs from sepsis or other viral infections.

The provision of a vaccine for COVID-19 for prevention and improvement of clinical presentation of infection has shown to be effective. However, the vaccine has also been associated with the development of haematological abnormalities such as VITT, APLS and other coagulation inhibitors, the clear association of which have yet to be determined. The future development of a more effective and standardised vaccine programme with targeted therapy for the COVID-19 infection is highly anticipated worldwide.

**Plenary 04 Innovation and new norm strategies in clinical training during pandemic: What have we learnt?**

Wah Tze Min  
Leeds Teaching Hospitals Trust, United Kingdom

This lecture intends to provide some pearls of wisdom as we emerge through the COVID-19 pandemic, the reflection, and lessons learnt from exploiting various IT innovations and strategies to provide teaching and training for medical students and trainees.

Many innovations have arisen due to the unprecedented need to respond acutely to a pandemic crisis that was unanticipated until it was upon all aspects of our life 18 months ago. National lockdown in various countries had meant that a lot of face-to-face learning in the classroom was prohibited. The challenges had indeed provided a great opportunity for us all to innovate the way we teach, engage, and impart knowledge to our students. Some of the changes are welcomed and refined to have a long-term role in our academic life. Certainly, the virtual platform breaks down the traditional barrier of needing to be in the same room before being taught. Indeed, global engagement in classroom participation is now an acceptable way of learning new knowledge in our academic life.

However, there are drawbacks; medical students still need to have hands-on experience, especially face-to-face learning by interacting with patients, which is a vital aspect of developing a rapport with our patients and an aspect of real-time clinical assessment. The restriction within the hospital environment meant that the present generation of medical students will have limited real-world experience during this pandemic period, and some of it may need to be accounted for during subsequent learning development as they embark on their journey as junior doctors.

**Plenary 05 Laboratory testing and vaccine development for COVID-19 in China**

Wang Wenling  
China Centre for Disease Control, China

As of October 8 2021, there were 236,132,082 confirmed coronavirus disease 2019 (COVID-19) cases and 4,822,472 COVID-19-related deaths worldwide, as reported by the World Health Organization (WHO). The ongoing global pandemic of COVID-19 caused by a novel coronavirus called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has been underway for about one year and ten months. The battle against the epidemic has arrived at a new crucial moment; "to prevent the coronavirus from causing a new epidemic" has been one of the core tasks in China. Several strategies have been utilized to win the battle against the epidemic.

On one side, it is necessary to strengthen laboratory testing of SARS-CoV-2 and quality control. The technical guidelines are formulated to guide disease control agencies and relevant institutions at all levels to carry out laboratory testing for SARS-CoV-2. Through October 8, 2020, 64 detection kits for SARS-CoV-2 nucleic acids (32 kits), antibodies (29 kits), or antigens (3 kits) have been approved by the National Medical Products Administration of China (NMPA). Convenient and reliable SARS-CoV-2 detection assays are efficiently used in China for strategic control of the pandemic.

On the other side, the vaccine development and immunization roll-out are performed on a large scale to prevent and control COVID-19. Multiple vaccines are currently in development, with 7 candidate vaccines being approved for emergency use. These use various platforms and are at different stages of development.

In this report, the detection kits approved in China are summarized. The three types of tests, namely nucleic acid, serological and antigen detection, which are available for detecting COVID-19, are discussed in detail. The development of novel detection kits will lay the foundation for controlling and preventing the COVID-19 pandemic globally. The novel vaccine development techniques and the various platforms used for candidate COVID-19 vaccines and the potential challenges are also addressed.

#### **Plenary 06 Preparedness for pandemic - regional perspective**

Babatunde Olowokure

*World Health Organisation (Western Pacific Region)*

Health security threats from disease outbreaks, natural disasters, food safety events and other public health emergencies continue to occur in the region and require continued preparedness even while responding to the greatest public health challenge faced so far this century.

The past 22 months have stressed health systems in all countries and areas in the region, and the COVID-19 pandemic has had an impact beyond health, leading to unprecedented disruption of economies and societies. The COVID-19 pandemic has exposed how vulnerable all countries, regardless of level of economic development are to global health security threats.

Guided by the Asia Pacific Strategy for Emerging Diseases and Public Health Emergencies (APSED), the strategic framework for implementing the International Health Regulations (IHR 2005) the Region adopts the approach of continuous learning for improvement. This means that the response to a current event (such as COVID-19) is used to support and prepare system readiness for the next health security threat such as the next pandemic.

Pandemic preparedness leveraging universal health coverage promotes strong and resilient health systems, serves the needs of the vulnerable and is crucial to strengthen health security systems during the COVID-19 pandemic and beyond. Investing in pandemic preparedness provides a solid foundation for health systems to respond to major disease outbreaks, including respiratory viruses with pandemic potential, and other public health emergencies.

#### **Plenary 07 The challenges of establishing a new medical school during a pandemic**

Danny McLaughlin

*University of Lincoln, United Kingdom*

The journey of establishing a new medical school in the UK is demanding and exhilarating in equal measure. Imagine a trip down a river in a canoe, navigating the whirlpools and rapids of funding, curriculum design, partnership working and student recruitment, before a bend in the river reveals calm water, a steady current, cool breezes and invigorating spray from the prow of the boat. Living your best life, you may even close your eyes for a spell. Sounds wonderful, doesn't it?

What no-one tells you is that the river has been re-diverted just ahead and you're about to meet a crashing waterfall that could smash your boat to smithereens. What do you do? Paddle backwards? Search for the life vests (are there any)? Adopt the brace position and hope for the best? Or pull over to the side and try to find an alternative route? Either way, you're going to get very wet.

In this presentation I will describe the specific challenges that we faced in establishing Lincoln Medical School in 2019 and how we have kept it going through the Covid-19 pandemic. I will also attempt to pick out some lessons learned so that we are better prepared... by the time we put the canoe back in the water, somewhere downstream.

#### **Plenary 08 Developing a novel stem cell and gene therapy system based on resveratrol-induced HSP70 promoter-regulated VEGFA expression**

Chong Kowit-Yu

*Chang Gung University, Taiwan*

Several studies have indicated that long-lasting regeneration following vessel ischemia may be stimulated through VEGFA gene therapy and/or mesenchymal stem cell (MSC) transplantation for reduction of ischemic injury in limb ischemia and heart failure. Furthermore, side effects of continued over-expression of VEGFA may result in vascularity, growth of lung tumor, increase in vascular permeability and development of substantial tissue edema. To avoid the VEGFA complications, we examine the protective effect of a conditional overexpression of VEGFA (under Resveratrol (RSV) induced HSP70 promoter regulation) in two animal models.

Our results showed that HSP70 promoter-driven VEGFA expression in MSC increased approximately 2-fold over the background VEGFA levels upon HSP70 promoter induction by RSV. The RSV-treatment of HSP-VEGFA-MSC exhibited synergy between HSP70 transcription activity and induced expression of antioxidant-related genes when challenged by cigarette smoke extracts. Exposure of HUVEC cells to medium containing MSC in which VEGFA had been induced by RSV enhanced tube formation in the treated HUVEC cells. RSV-treated MSC cells differentiated into endothelial-like phenotypes, exhibiting markedly elevated expression of endothelial cell markers. These MSCs also induced *ex vivo* aortic ring sprouting, characteristic of neovascular formation from pre-existing vessels, and additionally promoted neovascularization at the MSC transplantation site *in vivo* 3D scaffolds model. Furthermore, eight weeks after jugular-vein injection of HSP-VEGFA-MSC into mice with elastase-induced pulmonary emphysema, followed by RSV treatment to induce transgene expression, significant improvement was observed in respiratory functions. Expression of VEGFA, endogenous Nrf 2 and MnSOD was significantly increased in the lung tissues of the RSV-treated mice. Histopathologic examination of treated mice revealed gradual but significant abatement of emphysema and restoration of airspace volume.

We demonstrate that resveratrol-regulated VEGFA expression in HSP-VEGFA-MSC significantly improved the therapeutic effects on the treatment of ischemic disease and emphysema in the mouse, possibly avoiding side effects associated with constitutive VEGFA expression.

**Plenary 09 Prostate luminal progenitors as the cell-of-origin for androgen receptor-independent prostate cancer**

Chua Chee Wai  
Shanghai Jiao Tong University, China

In the recent years, we have witnessed the emergence of androgen receptor (AR)-independent prostate cancers (AIPCs) with the clinical use of second-generation androgen deprivation therapy, namely Enzalutamide and Abiraterone. In particular, upon progressing into AR-independent state, the remaining treatment option for AIPCs is palliative but not curable in nature. Unluckily, the cellular origins as well as the mechanisms involved in the evolution of AIPCs remain unclear.

Previously, we have discovered that AR is not required for the survival and progenitor properties of the castration-resistant Nkx3.1-expressing cells or CARNs, thus highlighting AR-independent nature of this luminal progenitor population. Interestingly, AR-deleted CARNs demonstrate gene expression profile that is highly similar to human neuroendocrine prostate cancer (NEPC), which is a subtype of AIPCs. Moreover, AR-deleted CARNs can generate tumours with neuroendocrine differentiation foci upon *Pten* deletion and mutated *Kras* activation, implying the ability of CARNs to serve as a cell of origin for NEPC.

Based on these results, we hypothesize that AR-independent prostate luminal progenitor subpopulations are capable of initiating tumors upon oncogenic transformation, while the resulting oncogenic-transformed cells represent subpopulations in AIPCs that possess cancer stem cells (CSCs) property. In our latest assessments, we have validated the ability of CARNs to initiate NEPC using a novel genetically engineered mouse model of prostate cancer. Moreover, we have also identified various AR-independent prostate luminal progenitor subpopulations that are capable of forming AIPCs upon oncogenic transformation.

Taken together, our study has provided novel insights into the development of AIPCs. Consequently, targeting these prostate luminal progenitors-initiated tumor cells as well as their molecular properties may serve as novel therapeutic strategies to overcome AR independence.

**LECTURES****L01 Medical education transformation: Effective simulation**

Vinod Pallath  
University of Malaya

Simulation in the context of clinical learning is said to mimic or amplify actual experiences. Mimicking real-life operationalises simulation and learner interaction with the imitated entity or event ensures active engagement in learning. The interaction could be with an actual or virtual entity, tool, device or individual. All such operationalising interactions, from role-playing to virtual or standardised and technology-enabled simulators, currently form the diaspora of simulation.

Real-life or actual workplace contextual situations, being opportunistic, always do not provide adequate deliberate practice chances to develop the mastery of learning and competency. The complexity of real-life situations also makes it challenging for early learners to assimilate and learn well. Simulation provides a regulated learning environment where the complexities can be optimised to the level of the learner, at the same time providing the learner with experience of contextual learning. As simulation mimics real-life situations, it can lead to encoding specificity in a situated learning experience resulting in effective deep understanding.

The growing complexity of health systems has led to the emerging concept of translational simulation for the direct improvement of functional healthcare systems for patient care. Translational simulation is said to result in not only the improvement of the individual and team, but it can also have the diagnostic or interventional potential for improving the work environment and system.

Simulation becomes most effective as an instructional strategy if it complements the workplace experiences of patient care in the medical school curriculum. The best educational outcomes of using simulation were observed when a carefully planned and outcome-driven systematic approach to curriculum integration of simulation components. A critical component of success in the implementation of simulation is feedback. The plan, pre-brief, and provide feedback/debrief, known as three 'P's of feedback, is essential in ensuring 'reflection in action' and 'reflection on action'. If implemented correctly, the simulation will ensure deliberate practice leading to personalised mastery learning, facilitating the establishment of effective patient care.

**L02 Innovation in online teaching/learning - virtual OT session: How I do it?**

Oh Kim Soon<sup>1</sup>, Simerjit Singh<sup>2</sup>  
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Due to the Covid-19 pandemic and ensuing movement restrictions, the operation theatre was off-limits. As an alternative method to continue the orthopaedic teaching, virtual Operation Theatre sessions were conducted. The surgeries were live-streamed to year three and year five medical students.

The OT list was received one day prior. We chose a suitable case to be live-streamed and informed the students through a WhatsApp group. The students were instructed to read about the selected case, surgery indications, complications etc.

Two sessions were conducted in 2020 using the Zoom platform. The first session was live-streamed from India by an international faculty on the total knee replacement procedure. The second session was on leg amputation and was live-streamed from Malaysia by a senior faculty, Dr Oh Kim Soon. Four sessions were conducted in 2021. They included various spine procedures (minimally invasive surgery), knee arthroscopy, anaesthesia induction, central venous line placement etc., streamed from Island Hospital, Penang. Microsoft Teams (Mteams) platform was used for live streaming. Dr. Simerjit started an online video meeting on Mteams, and the secured link was sent to the students and the operating surgeon.

One assistant in the operation theatre was required to hold and focus the camera on the operative field. For all the sessions, a mobile phone camera was used. In future, we plan to use an integrated camera with 4K video streaming, obviating the need for an assistant to hold the camera.

The virtual operation theatre allowed the students to watch the live surgery from the comfort of their homes. The operating surgeon (OKS) and facilitator (SJS) gave a running commentary. SJS explained the critical steps of the procedure. The students were encouraged to ask questions directly and through the Zoom/ Mteams chat. It allowed for an enriched discussion during the session. The students gave positive feedback regarding their experience of virtual operation theatre sessions. The main highlights were being able to watch the procedure clearly. The students were able to freely discuss their doubts with the operating surgeon and there were no constraints regarding the number of attendees.

### **L03 Innovation in online teaching/learning - virtual bedside teaching: How I do it?**

Wisam Abdul-Kadder Yassin Al-Obaidy  
*Universiti Tunku Abdul Rahman*

Our teaching methods were modified significantly during the COVID-19 pandemic. With intermittent lockdown, the classical methods of teaching become inapplicable. In particular, conducting clinical sessions for medical students is the most challenging part of education.

Therefore, during this extraordinary era, outstanding efforts are needed to achieve the course learning objectives. It is essential to use the available technology resources while maintaining effective learning and adhering to the Ministry of Higher Education and Malaysian Qualifications Agency guidelines. The aim is to improve acquiring of clinical skills for medical students during online teaching and make it close to the actual face-to-face clinical sessions.

Bedside Teaching (BST) is the most effective way of providing clinical skills to the students among these clinical sessions. Conducting virtual BST needs to be preceded by 2 preparatory steps: first, offering knowledge by providing the students with adequate and reliable materials. Second, offering clinical skills by training the students to obtain history taking and practising physical examination on a simulated patient (SP) through one of the platforms.

During virtual BST, the students start with taking a history from the lecturer who serves as SP. Then, students perform a musculoskeletal physical examination on the prepared SP. It followed by playing a previously prepared video of a real case with positive findings. Next, each student gives his/her positive findings with comments. Later, the lecturer re-plays the video with comments. Finally, a discussion is carried on the diagnosis and the management of that particular case. By this approach, we try to cover approximately 70-80% of skills gained by face-to-face BST.

### **L04 Management of COVID-19 in adult patients**

Pang Yong Kek  
*University of Malaya*

In the years 2020 to 2021, the world has witnessed the ravages of a novel coronavirus, termed SARS-CoV-2, which causes a pandemic. It was believed that the virus had emerged during the second half of 2019 and hence the disease caused by it has been officially named coronavirus disease - 2019 or "COVID-19".

Since then, many pharmaceutical products and treatment approaches have been developed and tried in clinical practice. Some of these are truly novel, but many are being retrieved from the pharmaceutical treasure chest and repurposed for the treatment of COVID-19.

Based on the treatment approach, we can divide the drugs into several categories: Anti-viral therapy to slow down the multiplication of the virus. Immuno-modulatory treatment to reduce the immune over-activities and hyper-inflammation that result in collateral damage to the human tissues and organ function. Supportive care to support and improve the dysfunctional organs while waiting for the recovery of these organs' normal physiological function. Treatment of complications that have arisen from the effects of COVID-19. Pre-emptive treatment to prevent post-exposure infection and/or disease severity. Rehabilitation of patients with chronic sequelae as a result of the disease.

### **L05 Management of COVID-9 in paediatric patients**

Gan Chin Seng  
*University of Malaya*

In comparison to adults, children with COVID-19 have milder symptoms and lesser disease severity. Up to 95% of paediatric cases were mild to moderate in severity and can be managed supportively. Only those with serious manifestations such as acute respiratory failure, cardiovascular shock, altered consciousness or multiorgan failure required to be hospitalised. In addition, infants and children with comorbidity are often also admitted for closer monitoring and treatment.

The nature of treatment of COVID-19 in children is still mainly supportive, and corticosteroids are only used for those with pneumonia, hypotensive shock, myocarditis, encephalitis, and secondary haemophagocytic lympho-histiocytosis (HLH), in addition to maintaining the hydration and oxygen supplementation. Antiviral and immunomodulatory are both not routinely used but should be considered in severe cases with organ dysfunction with rapid deterioration despite the use of corticosteroid within a clinical trial setting or on a case-to-case basis. Similarly, venous thromboprophylaxis is also not used in all severe cases unless there was cardiac involvement, presence of Kawasaki-like features in multisystem inflammatory syndrome related to COVID-19 (MIS-C).

MIS-C is commonly seen in paediatric population for unknown reason. Incidence is about 2/100,000 children population based on the UK statistics. This is a potentially life threatening post-infectious condition related to COVID-19, and usually happens 2–6 weeks following asymptomatic or mild COVID-19 infection in previously healthy children. The clinical features may or may not have features similar to Kawasaki disease. The recommended treatment includes intravenous immunoglobulin, corticosteroids (methylprednisolone), aspirin, heparin, and immunomodulatory agents (e.g., tocilizumab and anakinra).

Respiratory support is essential in those with respiratory distress, and this includes heated humidified high nasal cannula therapy (HHFNC), continuous positive airway pressure (CPAP), and bilevel positive pressure ventilation (BiPAP). Invasive mechanical ventilation would be used if the respiratory involvement deteriorated.

Renal replacement therapy (CRT) is used for those with acute kidney injury or fluid overload while plasma exchange (TPE) is used for acute liver failure. Extracorporeal membrane oxygenation (ECMO) is suggested when mechanical ventilation or CRT fail, and cardiopulmonary failure occurs.

More research is needed to better define and understand the disease course, pathophysiology and the treatment of COVID-19 infection in children.

#### L06 Ivermectin for COVID-19 Control

Chuah Candy

Universiti Tunku Abdul Rahman

Ivermectin (IVM) is a broad-spectrum anthelmintic drug approved by the Food and Drug Administration (FDA) and World Health Organization (WHO). It is used to treat people with intestinal strongyloidiasis, onchocerciasis, scabies, ascariasis, trichuriasis and lymphatic filariasis. IVM was chemically derived from the avermectins of *Streptomyces avermitilis*. It acts via binding to the glutamate-gated chloride ion channels in the cell membranes of nematodes, thereby increasing the intracellular chloride concentration that leads to paralysis and death of the parasite. Other than its antiparasitic effect, IVM has been shown to demonstrate *in vitro* antiviral activity against a wide range of DNA and RNA viruses, including human immunodeficiency virus-1 (HIV-1), dengue virus (DENV), Zika virus, yellow fever virus, influenza virus and chikungunya virus.

A recent study reported that a single dose of IVM was effective against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) by drastically reducing viral RNA in a cell culture by 48 hours, via the inhibition of IMP  $\alpha/\beta$ -mediated nuclear import of viral proteins. However, these *in vitro* studies have not been clinically demonstrated. Together these findings have prompted further investigation in the clinical setting, in which a number of randomized controlled trials (RCTs) have been conducted to evaluate the efficacy and safety of IVM for its use in the control of COVID-19. Findings reported from these RCTs have shown contrasting results on the clinical benefits of IVM in COVID-19 patients.

Based on the recent systematic review and meta-analysis, there is limited evidence to support the clinical use of IVM outside of a well-designed RCT. Overall, there is insufficient data to recommend the use of IVM for the control of COVID-19.

#### L07 Study on the effect of *Andrographis paniculata* capsule in reducing the severity of complications associated with coronavirus infection in COVID-19 patients in Mae Fah Luang University Medical Center Hospital: A retrospective study

Rawiwan Charoensup

May Fah Luang University, Thailand

*Andrographis paniculata* (Burm.f.) Wall.ex Nees is known as “King of Bitter”, which belongs to the Acanthaceae family. It is an important medicinal plant for treating various ailments such as the common cold, diarrhea, and fever due to several infectious causes. A major bioactive component of *A. paniculata* is andrographolides, a diterpene lactone. The Guidelines for clinical practice, diagnosis, treatment, and prevention of healthcare-associated infection in response to patients with COVID-19 infection 2021 of Thailand had recommended using *A. paniculata* capsules in COVID-19 patient with mild symptoms, with no risk factor for severe COVID-19 infection. There is no contraindication of using *A. paniculata* capsules, and the calculated dosage of andrographolide is 180 mg/person/day at a frequency of 3-4 times/day before meal for 5 consecutive days. In this retrospective study, we enrolled 110 patients (mean age: 31.44 ± 9.24 years; 51.82% males and 48.18% females) with laboratory-confirmed COVID-19 admitted to Mae Fah Luang University Medical Center Hospital, Chiang Rai, Thailand during June to September 2021. Demographical details and clinical symptoms on admission were recorded; complications and outcomes were followed up for 5 days. The study outcomes were assessed using descriptive statistics and repeated-measures ANOVA. Among mild COVID-19 in 110 patients with lab-confirmed COVID-19, 70% presented with respiratory symptoms (cough, runny nose, sore throat, dyspnea), 16.36% had gastrointestinal symptoms (diarrhoea), 5.45% had dermatological symptoms (rash), 22.73% had neurological (headache), and 57.27% had other non-specific symptoms (fever, conjunctivitis, myalgia, disturbances of smell or taste). Among those patients who were hospitalized at Mae Fah Luang University Medical Center Hospital, Chiang Rai, Thailand and taking *A. paniculata* capsule for 5 consecutive days (N = 110), the symptoms score of respiratory symptoms (cough, runny nose, sore throat and dyspnea), gastrointestinal symptoms (diarrhoea), neurological (headache), and other non-specific symptoms (fever, myalgia and disturbances of smell or taste) were significantly decreased from baseline with  $p < 0.05$ .

#### **L08 Simulation-based teaching in the Covid era**

Dinker Pai

*Mahatma Gandhi Medical College and Research Institute, India*

Simulation based education (SBE) is now a well-accepted modality of education in the health sciences. It has been shown beyond any doubt to provide effective cognitive, psychomotor and affective learning. It is an especially valuable tool to impart skills training, both for technical as well as for non-technical skills.

During the pandemic, all forms of healthcare education have been severely impacted by the need for shifting to online teaching-learning methods, the need for social distancing, the need for minimizing patient contact with students etc. Skills-training presents a unique set of challenges in such a scenario. This presentation will explore how SBE has been modified the world over to adapt to online teaching. It will discuss the issues and possible solutions for shifting simulation to an online or hybrid platform.

#### **L09 UTAR Internationalization: Past, Current and Future**

Lai Soon Onn

*Universiti Tunku Abdul Rahman*

Up to date UTAR has established partnership with more than 500 national and international university and industry partners from 30 economies, and implemented various strategies and initiatives to enhance collaboration activities, including student and staff mobility programmes, talent development, research collaboration and community engagement. The talk will focus on the progress, strategies and initiatives of UTAR internationalization. It will also provide information regarding the current collaboration activities and experiences with local and international universities and industry partners via online platforms under the impact of the Covid-19 pandemic, as well as the future internationalization trends and opportunities in the post-Covid-19 era.

#### **L010 How to manage acute lung injury caused by COVID-19**

Li Yuping

*Wenzhou Medical University, China*

Coronavirus disease 2019 (COVID-19) can cause severe respiratory failure requiring mechanical ventilation. The abnormalities observed on chest computed tomography (CT) and the clinical presentation of COVID-19 patients are not always like those of typical acute respiratory distress syndrome (ARDS) caused by other microorganisms. The disease changes with time, resulting in diffuse alveolar damage and thromboembolism in small blood vessels.

In this lecture, we will discuss the definition and mechanism of the critical type of COVID-19, introduce different phenotypes of ARDS. We also introduce various methods to manage the disease, suggest personalized management strategies of COVID-19 according to different phenotypes.

#### **L011 Post Covid-19 pandemic Public Health training**

Lokman Hakim bin Sulaiman

*International Medical University, Malaysia*

SARS-CoV-2 (COVID-19) pandemic is unprecedented in the history of infectious disease pandemics globally and nationally. It is unprecedented in all forms – speed of spread, the burden of infection, morbidity and mortality, public health and social measures are undertaken, socio-economic impact globally and nationally, and the level of international collaboration and coordination in responding to the pandemic. Within 6 months of its appearance, this novel coronavirus infection spread worldwide, causing hundreds of millions of infections and millions of deaths. Malaysia, too suffered from the devastating effect of the pandemic - health and socio-economically. On top of that, the pandemic exposes the challenges of a failing of our healthcare systems and its sustainability in the country, unpreparedness in the healthcare system and the essential supplies chain system, lack of leadership, intersectoral leadership in coordination, lack of transparencies and declining public trust. These are all important public health elements and functions. Public health education traditionally focused on competencies in the areas of epidemiological methods, biostatistics, health systems, disease prevention and health promotion, health management and economics, public health practice and occupational and environmental health. There is a need to strengthen capacity, knowledge, and competencies in some of these existing areas, such as politics and health, leadership, multisectoral coordination and community engagement and empowerment. Future public health practitioners will also need to develop and acquire capacity, knowledge, and competencies in supply chain management and managing misinformation and fake news (infodemic). The public health workforce must also embrace digital technology to enhance their capacity in data collection, synthesis of information for decision-making, and timely dissemination. Machine learning and artificial intelligence will be the game changer in diagnosis, surveillance, and response, especially during outbreaks and public health emergencies. Commission on Education of Health Professionals for the 21<sup>st</sup> Century stress that the purpose of health profession education was to improve the health of the communities. The SARS-CoV-2 pandemic has brought clarity to this purpose.

**L012 Journey as a Public Health specialist**

Thilaka Chinnayah  
 Ministry of Health, Malaysia

My ambition started as early as six years old, and I always wanted to become a doctor to serve the people. Once I completed my medical degree, the thirst continued. I wanted to dedicate my life to a field that I could be passionate about and fulfilled by. Then, I knew that I needed to be equipped with meaningful technical skills to positively impact and help others. I decided the best course of action was to immerse myself in a multitude of fields to gain invaluable experience and find my dream career. I decided to pursue a Master's degree in Public Health. That was an excellent decision that changed my whole life.

After obtaining my Master's in Occupational Health, I further specialized in field epidemiology and was the first graduate of Epidemic Intelligence Program (EIP) Malaysia sent to WHO, Western Pacific Regional Office in Manila to subspecialise in Health Security and Emergencies. Since then, I have contributed locally in managing the first case of MERS-CoV and the first cluster of COVID-19 in Malaysia. My chosen career has given me vast exposure to international work with Ebola in Sierra Leone, West Africa, Typhoon Maysak in the Federated States of Micronesia, pandemic preparedness in Mongolia, Lao PDR and Cambodia. I have also contributed to the disaster management in response to the flooding and cyclones in Thailand and Vanuatu respectively.

My focus will continue to be working with communities and programs for the betterment of humankind.

**L013 Teaching and assessing clinical skills during the pandemic**

John Frain  
 University of Nottingham, United Kingdom

"I dream things that never were and say, "Why not?""  
 George Bernard Shaw

Entrants to our Graduate Entry Medicine programme have sacrificed much to join us; lucrative careers, professional status and family life. The onset of the Covid-19 Pandemic in March 2020 was distressing and raised questions like: will I still qualify as a doctor? How will I learn the skills I need?

It was distressing to their teachers too. So much of our own professional self-esteem is bound together with our teaching. Scrambling to learn Teams and Zoom, we quickly understood the need to reassure our students, to enable and to challenge them in their continuing to believe that they could succeed and progress unimpeded into the Clinical Phase of their training despite the challenges.

So, though isolated from one another it became completely normal to examine teddy bears and pillows as proxies for real patients, to discuss how these prototype skills could be transferred back to the real world so they could be ready when the time arrived, as it eventually would.

So, this is the story of a journey with many aspects; technical questions – wired internet or wi-fi for broadcasting via Teams; virtual teaching lab or none at all; 'what is a switcher?', live demonstration of physical examination and opportunities for interaction between student and teacher or the remoteness of solely viewing videos. Our technicians excelled and brought to each live online session – our actors, our patients, our students, and our teachers. No sessions were cancelled; all objectives were covered and when we returned to face-to-face teaching in September 2020, we began to assess and prepare – mock OSCEs; socially distanced, non-contact OSCEs, group OSCE then individual assessments – safety first and then progression onward to clinical phase. And progress they did, now all the students progressing to the clinical phase.

And as a parting gesture, a gift from the student body "You'll never walk alone" – we travelled this road together and we are all winners.

**L014 Adapting to the COVID-19 pandemic: Efforts by academic dental institutions in USA**

Sangeeta Gajendra  
 University of Rochester, United States of America

Introduction: COVID-19 has widely affected lifestyles as well as changed the way businesses operate, including the dental industry. Major challenges were faced by academic dental institutions during the COVID-19 pandemic in the United States. The aims of this study are to describe the processes involved and measures taken to overcome its impact by one post-doctoral institution and to conduct Key Informant Interviews (KII) with leaders in academic dental institutions in United States to help understand the overall experiences, financial burden, processes and steps taken to mitigate the challenges during the COVID-19 pandemic. Methods: This study presents the methods used to implement steps taken to overcome the impact of COVID-19 on dental education by one post-doctoral dental institution as part of a University Medical Center. Minutes of meetings attended by the Leadership Team during the pandemic were reviewed. Ten key informant interviews were conducted of Deans or key personnel in leadership roles from academic dental institutions in different regions in the United States. ZOOM interviews were recorded, transcribed and coded. Qualitative thematic analysis conducted by independent raters reached final agreement using a Grounded Theory Approach. A series of themes emerged from the transcribed data describing the impact of COVID-19 pandemic. Results: Although the institution faced huge setbacks in dental education, clinical care and research, several changes were implemented to adapt to the conditions during the pandemic. Guidelines that kept evolving over time were implemented based on national, state and dental association guidelines. Protocols were developed for clinical care and learning with safety as the top priority for the students and staff. From the key informant interviews, themes that emerged were: use of virtual learning platforms, managing sim labs and clinical areas when it resumed, teledentistry, graduation of students and financial consequences among others. Conclusion: Our findings suggest that although the pandemic had an impact on dental education,

new innovative ways of teaching have emerged. Dental institutions adapted to improvise the educational methodologies for students and trainees during this public health crisis. There are lessons learned and recommendations that can be useful to provide direction in future pandemics.

#### **L015 Of sweet hearts and broken hearts: A review of heart failure and diabetes during the pandemic**

Calambur Narasimhan

*AIG Hospitals, Hyderabad, India*

Diabetes mellitus (DM) and Heart failure (HF) are associated with increased morbidity and mortality and they often occur together. Patients with DM have approximately two to fourfold risk of HF compared to individuals without DM. In younger patients with type II diabetes, the risk seems to be even higher (approximately 11-fold in individuals <45 years old). The mechanisms and management of HF in a diabetic will be addressed in this review.

Mechanism of Heart failure in a Diabetic:

Diabetics may develop HF due to several mechanisms. High prevalence of coronary artery disease, associated hypertension may result in HF. But DM by itself may lead to HF. Long standing insulin resistance leads to LVH, accumulation of advanced glycation end products and microvascular disease. These factors lead to diastolic and systolic dysfunction of the heart which results in the syndrome of heart failure.

Myocardial energy depletion and coronary microvascular dysfunction are common in diabetic heart disease. Myocardial energy depletion occurs due to multiple factors. It is related to limitations in uptake and utilisation of substrates, and impaired energy transfer from mitochondria to myofibrils and mitochondrial dysfunction. These changes, along with impaired myocardial perfusion, decrease the ability of the diabetic heart to increase energy production during acute increase in workload.

While several drugs are able to control the hyperglycemia, HF continues to occur and progress despite adequate control of HBA1c. An outline of how to identify, prevent and treat this twin epidemic will be presented in this talk.

#### **L016 Physiotherapy services to the disabled during COVID-19 pandemic**

Jagatheesan Alagesan

*Saveetha Institute of Medical and Technical Sciences, Chennai, India*

The coronavirus (COVID-19) pandemic has brought about several changes in health care systems, including the delivery of health care services. The impact is most profound in physiotherapy, where close and sustained contact is essential. The role of physiotherapy has been recommended for both acute and long-term care of those with COVID-19. Still, the physiotherapy service that has been offered for persons with disabilities are greatly affected. Changes in the lifestyle patterns of home confinement could cause other detrimental effects among persons with disabilities. The interruption of rehabilitation services due to transport limitations, safety concerns, and economic constraints has added stress on persons with disabilities and their families.

In this new normal with restricted access to rehabilitation services, there is a need to provide alternative delivery methods for continuing physiotherapy services to persons with disabilities. Ensuring the continuum of care during the pandemic poses several challenges to the physiotherapist because most physiotherapy interventions for persons with disabilities involve close contact and physical handling of the disabled, making delivery of services unsafe for both the disabled and physiotherapist. So, our approach towards assessing and managing persons with disabilities requires transformation by adopting alternate modes of delivery of services. Traditionally physiotherapists use home programs to involve family members to provide interventions between treatment sessions, but adherence to or the effectiveness of these methods was not studied extensively.

Tele-physiotherapy services may play a vital role during pandemics. Physiotherapy services may be provided and monitored through video-based platforms using smartphones and video calling apps. Regular guidance to the caregivers may be provided through recorded videos, pictures, handouts, written information, or video calls. Delivery of services through these measures requires the family members to have access to information and communications systems like laptops or smartphones and access to internet services, which poses further challenges in the delivery of physiotherapy care, especially in low and middle-income countries. Lack of evidence in the current scenario provides the opportunity to generate evidence to bridge the gap in the delivery of physiotherapy services to the disabled.

#### **L017 Use of platelet lysates in *ex vivo* cell expansion and for other potential therapeutic applications in regenerative medicine**

Thierry Pierre Robert Burnouf

*Taipei Medical University, Taiwan*

Platelets are nucleated blood cells that are vital for haemostasis and contain a unique combination of cell growth-promoting factors and nutrients. They play crucial roles in reconstructing damaged tissues, initiating angiogenesis, remodelling the vasculature and, globally speaking, wound healing.

There is ample evidence that human platelet lysates (HPL), manufactured from platelet concentrates initially intended for transfusion, can be used as a substitute for fetal bovine serum (FBS) as a clinical-grade supplement for *in vitro* expansion of human cells, especially mesenchymal stromal cells (MSCs). Using HPL in place of FBS as a growth medium supplement allows to expand therapeutic cells for transplantation under xeno-free conditions. The use of HPL alleviates safety concerns regarding the risk of immunological complications or zoonotic infections associated with the presence of animal-derived materials in transplanted cells and typically allows faster cell expansion without affecting their functional properties. HPL can

be manufactured from “outdated” platelet concentrates (HPL), including those subjected to a pathogen reduction treatment, and is now regarded as the “gold standard” xeno-free growth medium supplement for cell therapy applications. The presentation will update the experience gained in the production and use of HPL as a supplement for expanding MSCs, differentiated cells, and immune cells, such as chimeric antigen receptor (CAR)-T cells, for cell therapy applications.

There is also great interest in the direct clinical applications of autologous or allogeneic platelet-derived preparations, such as “platelet-rich-plasma” and various types of HPL in regenerative medicine. We will address applications in various clinical fields encompassing orthopaedic surgery (e.g., treatment of osteoarthritis), maxillofacial and dental surgery (e.g., bone augmentation and implants), soft-tissue wound healing (e.g., cure of recalcitrant leg ulcers), or treatment of dry eye syndrome. However, the lack of product standardization and the insufficient number of controlled clinical studies still affect this platelet therapy’s recognition and optimal use. The presentation will also cover our pre-clinical developments in using a dedicated and well-characterized platelet lysate rich in neurotrophins for brain administration and treatment of neurodegenerative disorders and traumatic brain injury.

#### **L018 Cellular Reprogramming and iPSC Technology in Retinal Diseases**

Chiou Shih-Hwa

*National Yang Ming University, Taiwan*

The development of induced pluripotent stem cells (iPSCs) has opened a new era for stem cell research. How to quickly, efficiently, and safely produce specific-lineage differentiation from pluripotent-state cells and iPSCs is still an open question. To overcome this critical obstacle, we performed proteomic analysis to find that Parp1, a key factor for DNA repair, plays a crucial role in regulating the efficiency of cellular reprogramming. Furthermore, the generation of patient- or disease-specific iPSCs holds promising potential for the drug industry and regenerative medicine. Following this concept of using iPSC technology, we have reprogrammed T cells from patients with dry type aged macular degeneration (AMD) into induced pluripotent stem cells (iPSCs) and differentiated them into retinal-lineage neurons and retinal pigment epithelium (RPE) cells that were used as an expandable platform for investigating pathogenesis of the AMD and *in-vitro* drug screening. Moreover, we demonstrated a plasma treated and laminin coated PDMS film that can enhance the attachment, sustain the survival, and facilitate the functional maturation of iPSC-differentiated retinal pigment epithelial cells (dRPE) seeded on it. The dRPE/PDMS-PmL implant was able to enhance the response to light stimuli *in vivo*. Taken together, our findings provide the pre-clinical examinations for the prospective clinical application of Human iPSCs, including dRPE/PDMS-PmL subretinal implant, in treating aging degeneration diseases like AMD.

#### **L019 Exploring the role of mesenchymal stem cells in post-COVID lung complications**

Chin Sze-Piaw

*CMH Specialist Hospital, Seremban*

The unprecedented global mayhem brought about by the COVID-19 outbreak has so far infected over 200 million people and claimed nearly 5 million souls. The pandemic has depleted hospital resources and exhausted the healthcare staff. One of the debilitating effects of the infection is cytokine storm resulting in pulmonary and systemic inflammation that leads to prolonged ventilator use and long-term disability among about 15% of post-infection survivors. Immune-suppressants and anti-inflammatories can potentially help.

Cytopoetics have previously demonstrated the anti-inflammatory effect of mesenchymal stem cell (MSC) in a dose-dependent manner, in suppressing TNF-alpha and increasing IL-1RA and IL-10. We have also demonstrated the immune-modulatory effects of MSC in patients with acute GVHD patients. The latter supports the use of MSC as upfront treatment along with steroids for patients with acute GVHD with a significant improved response and 30-day survival. We have previously demonstrated that MSC could help restore lung parenchymal tissue and reduce pulmonary hypertension in an animal model. Indeed, the intravenous infusion of MSCs would naturally migrate to the lungs. From there MSCs could directly mitigate inflammation, protect alveolar epithelial cells, and reverse lung dysfunction and pulmonary fibrosis via paracrine actions.

Therefore, MSC has emerged as a potential anti-inflammatory agent that does not suppress the immune system and could help with lung tissue recovery. Consequentially the speed of development of cell therapy has accelerated. To date, over 80 countries around the world are exploring the use of MSC for COVID-19 treatment with more than 350 clinical trials in progress. This lecture provides an overview of the results of the completed studies and our local experience.

#### **L020 Cancer care during COVID-19 pandemic**

Nirmala Bhoo Pathy

*University of Malaya*

In low- and middle-income settings where healthcare resources are overstretched, the delivery of care for non-communicable diseases, including cancer, has been negatively affected by the COVID-19 pandemic. Our preliminary findings from Malaysia showed that lack of resources, hospital policies on COVID-19 restrictions, care-seeking behaviour related to fear of COVID-19 and lack of care coordination were among the barriers our patients face in cancer care during the pandemic. On the other hand, having an alternative mode for consultations via online and phone services, compassionate enforcement personnel who ease travelling for patients from other states, well-coordinated hospice care and reassurance of infection control measures at hospitals were identified as the facilitators’ patients face when seeking cancer care. In the void of published data on the impact of the pandemic on cancer care in the Malaysian context, much effort is needed to recognise and position cancer as a public health priority. Early detection and diagnosis are still the emphases; however, health promotion activities to raise awareness on cancer

risk factors should be creative and tailored to a multicultural society. A key lesson for cancer control from the current pandemic is to invest in healthcare systems' preparedness to provide a timely medical response without compromising the quality of cancer care during future disasters.

#### **L021 Anthroposophic therapeutic approach in cancer patients**

Georg Soldner

*University of Spiritual Science, Switzerland*

Treatment of cancer patients is a main focus of Anthroposophic Medicine (AM) since 1917. AM is a practice that involves an integrative therapeutic approach to disease conditions that include conventional oncological diagnostics and treatments as well as original AM treatments. The main goal of the anthroposophic treatment of cancer patients is the empowerment of self-regulation on a physiologic, psychologic and spiritual basis.

AM has developed a specific pharmacologic cancer treatment with mistletoe preparations for parenteral application in the center. Mistletoe preparations show effects on life quality in terms of physiologic as well as psychologic aspects and may show effects on tumor growth/risk of relapse. Mistletoe therapy is more and more evaluated by clinical studies. AM offers also non-pharmaceutical therapies in the following fields:

- Nursing including external applications, rhythmical embrocations
- Rhythmical massage, oil dispersion bath
- Arts therapy, Eurythmy therapy
- Psychotherapy, biographical counselling

Multi-professional AM settings offer an effective and sustainable treatment e.g. in patients with cancer related fatigue syndrome and palliative care. For more information, please refer to <https://www.mistletoe-therapy.org> or <https://www.anthromedics.org/PRA-0559-EN>

#### **L022 Microfluidic Technologies for Liquid Biopsy & Precision Medicine: From Bench to Bedside**

Lim Chwee Teck

*National University of Singapore, Singapore*

There are approximately 5 billion cells in one milliliter of blood with red blood cells accounting for >99% of all cellular components. Besides blood constituents, pathogenic microorganisms or diseased cells such circulating cancer cells can also be present in peripheral blood. In fact, this is of clinical significance as their presence in blood can present possible routes for disease detection and diagnosis.

Here, we address these issues and demonstrate that cell mechanics related biomarkers such as cell size and deformability can be effectively used for diseased cell detection for diagnosis from blood using microfluidics by leveraging on its many inherent advantages such as high sensitivity and spatial resolution, short processing time and low device cost. We will present examples of cancer diagnosis via the detection and retrieval of circulating tumour cells from peripheral blood of patients via a routine blood draw (aka liquid biopsy).

These simple, efficient, and cost-effective approaches will be imperative in realizing diagnostics and the enrichment of clinical samples for subsequent downstream molecular analyses.

Currently, our technology has been commercialized and being used in Australia, USA, Europe and Asia.

#### **L023 Application of Traditional Chinese Medicine in the treatment of COVID-19**

Yao Xueming

*Guizhou University of Traditional Chinese Medicine, China*

COVID-19 (Coronavirus) is regarded as respiratory distress syndrome (COVID-19) due to the novel coronavirus disease. More than 210 million confirmed cases and 4.51 million deaths have been reported worldwide, and the number of confirmed cases is still increasing, which has been designated as a public health emergency by the World Health Organization. Since the outbreak of the COVID-19, the main plan of Western medicine is to support therapy, and no effective treatment has been confirmed yet. However, in terms of prevention and treatment measures, China has actively brought the role of traditional Chinese medicine, strengthened the integration of Traditional Chinese and western medicine, and established the joint consultation system of traditional Chinese and Western medicine. Its virulence is strong and can affect both men and women, old or young, via nose and mouth and has strong infectivity. It belongs to the traditional Chinese medicine "disease" category. Most experts believe that the basic pathogenesis of traditional Chinese medicine is "wet, poison, blood stasis and closing". The course is divided into early-stage, progress and four stages (critical period), the recovery period, and different treatment plans for different stages. The treatment of COVID-19 with syndrome differentiation of traditional Chinese medicine provides individualized treatment measures. Besides taking medicine medicinal broth, proprietary Chinese medicine and injections combined with the characteristics of traditional Chinese medicine treatment, such as acupuncture, physical therapy, Chinese medicine treatment of patients with mild and convalescence can make up for the inadequacy of western medicine. It provides a unique advantage as some patients with severe diseases treated with TRADITIONAL Chinese medicine have achieved obvious clinical efficacy in improving symptoms, improving immune function, and controlling disease progression. Resistance to disease patterns and curative effect of traditional Chinese medicine in China will help the global fight against COVID-19 as a reference, the success of which will continue to help with the propagation and development of traditional Chinese medicine culture. The antiviral efficacy of traditional Chinese medicine or formula will lead to more in-depth research, clinical evidence-based evaluation and thus help contribute to the benefit of humanity.

**L024 Research and practice of meridian massage**

Shi Guofeng

*Guizhou University of Traditional Chinese Medicine, China*

Meridian massage has a theoretical basis of the theory of dirty image. Traditional Chinese medicine believes that the human body is an organic whole with people, and the external environment has an organic connection to the overall system; the meridians are an important part of it.

Meridian and collaterals theory is one of the important traditional theories of traditional Chinese medicine in China. Many levels of the human body are organically linked together through the meridians and acupoints. Through the acupoints, one can not only understand the overall information but also adjust the function of the body, accelerate the exchange of material and energy between various levels, and promote the regeneration of some functions of the body, to achieve the purpose of disease prevention, treatment, and rehabilitation.

**L025 Help to improve the immunity via external treatment of Traditional Chinese medicine**

Zhang Ning

*Guizhou University of Traditional Chinese Medicine, China*

In the fight against COVID-19, TCM has made an excellent contribution. The white paper, Fighting Covid-19 China in Action showed that TCM had played a unique part in saving lives. 92% of COVID-19 patients have been treated using TCM methods, while the usage rates and total effective rate among COVID-19 patients is over 90%. The standards and technical plans of TCM diagnosis and treatment have been promoted nationwide. Meanwhile, China has actively promoted international exchanges and cooperation on TCM. TCM is the great creation of the Chinese nation and the treasure of ancient Chinese science, which can contribute Chinese wisdom to constructing a community of human health. Therefore, how to give full play to the unique advantages of TCM in disease prevention and treatment? It depends on the basic theories of TCM and the application of principles, methods, and techniques in medical treatment. TCM doctors believe that if healthy qi takes control of the body, the pathogenic factors cannot attack the body, while if the pathogenic qi attacks easily, the healthy qi must be weak. Healthy qi is the immunity and resistance in terms of modern medicine. Among the principles, methods and techniques, techniques can be promoted easiest, named the external treatment of TCM. External therapy is a treatment method that uses drugs, surgery, or equipment to directly act on the part of the body surface or diseased part of the patient to achieve the purpose of treatment. External therapy enables the medical apparatus to act directly on the skin and mucous membrane and achieve the therapeutic purpose through local absorption, a unique and essential important therapy of TCM. This report starts from the basic theory of TCM and tells how to improve the body's immunity and resistance by using external treatment of TCM.

**L026 Chinese Medicine and COVID-19 in Malaysia**

Te Kian Keong

*Universiti Tunku Abdul Rahman*

Dr Te will introduce various Chinese Medical activities by Chinese Medicine Task Force Malaysia (COVID-19) in fighting COVID-19 in Malaysia. Many significant approaches have been conducted including safety guidelines for Chinese medical personnel in Malaysia during COVID-19, Chinese Medicine practice guidelines for COVID-19 in Malaysia, Herbal Drinks/Chinese Herbs for Malaysian community, telemedicine (zero-contact online) of Chinese medical consultation, etc. Out of the 6000 residents who applied for Herbal Drinks/Chinese Herbs through telemedicine, about 5,000 out of them were considered as COVID-19 contact, patients and discharged patients. The concept, method and SWOT analysis of Chinese medical telemedicine for COVID-19 patients will be shared and discussed.

**POSTER ABSTRACTS****P01 Visual analysis of research hotspots and trends of TCM in cerebral palsy based on CiteSpaceknowledge map**

Wang Xing, Wang Xinghua, Teh Siew Hoon

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Objective: The aim of this study is to carry out visual analysis, to explore the developmental status, research hot spots and developmental trends in the clinical research field of TCM for cerebral palsy during the past 10 years, so as to provide the basics and guidance for future research. Methods: The database selected was the China National Knowledge Infrastructure Project (CNKI), from which the literature on TCM research on cerebral palsy from January 2011 to December 2020 was retrieved. The obtained data files were uploaded into the CiteSpace software which could perform co-occurrence of authors, research institutions and keywords to obtain the relevant knowledge map. Results: A total of 1170 articles were included after co-occurrence analysis by CiteSpace. The researcher and institution of the most published paper was Professor Liu Zhenhuan from Nanhai Obstetrics and Gynecology Hospital, Guangzhou University of TCM. The study showed that various researchers and institutions lacked communication and cooperation. Research hot topics included acupuncture treatment, tuina, rehabilitation, motor function and evaluation. In addition, some scholars had begun to explore the mechanism of disease through rat experiments. Conclusion: The number of papers on TCM for cerebral palsy has been increasing steadily. The knowledge map shows that in recent years, the research hot spots in this field are mainly in acupuncture, integrated traditional Chinese and western medicine, motor functional evaluation and mechanism research.

#### **P02 Bubble milk tea consumption habit among students in a private university located in Kajang**

Lim Zhi Qian<sup>1</sup>, Woo Li Fong<sup>1</sup>, Jagjit Kaur Najjar Singh<sup>1</sup>, Mohammed Abdulrazzaq Jabbar<sup>2</sup>

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**Introduction:** Bubble milk tea has become a wildly popular drink among young adults. It has been known to contain high sugar content with few nutrients. Hence, a high consumption of bubble tea has a detrimental impact on one's health. This survey aims to investigate the habit of bubble tea consumption habit among students in a private university. **Methods:** A self-administered questionnaire adapted from Beverage Intake Questionnaire (BEVQ-15) was used. Participants aged 18 years and older who were pursuing undergraduate programs were recruited. A convenience sampling method was used together with face-to-face data collection done in March 2020. The SPSS version 23 statistical programme was used to analyse the data. **Results:** A total of 383 participants were recruited, of whom 356 (93%) were found to have consumed bubble tea. Females (207/356; 54.0%) consumed more compared to males (149/356, 38.9%). In addition, 136 (38.2%) had consumed for more than three years, 262 (73.6%) less than one cup per week of the regular size (500mL), 168 (46.2%) chose 50% of the sugar level while 80 (22.4%) had 100% of sugar level. **Conclusion:** A regular size cup of bubble tea contains 38gm of sugar (299 kcal) which is far more than the recommended daily sugar allowed. Therefore, intervention is required to create awareness on bubble tea consumption habit among young adults to reduce the bad impact on health in future.

#### **P03 The development of a vascular endothelial growth factor (VEGF) rapid test for the early detection of severe dengue**

Sheng Jye Lim<sup>1</sup>, Yun Fong Ngeow<sup>1,2</sup>, Seng Chiew Gan<sup>1</sup>, Hooi Tin Ong<sup>1</sup>, Kurt Sy<sup>3</sup>, Hsien-Chang, Chang<sup>3</sup>

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**Introduction:** Vascular endothelial growth factor (VEGF) is a protein that has been reported to be involved in the immunopathogenesis of dengue. This protein is noted to be highly expressed in severe dengue patients with noticeable symptoms of plasma leakage. Currently, there is no available test for the detection of biomarkers in patients with dengue, even though many studies have identified biomarkers which are potentially useful for the prediction of severe dengue. Dielectrophoresis (DEP) is a technique that uses electric fields to polarize bioparticles and manipulate their movement. It has been applied in medical science for cell sorting and detection of DNA or proteins present in small quantities or in small volume samples. **Materials & Methods:** In this study, a 3D DEP-based microfluidic chip was developed for the detection of VEGF, using an aptamer-antibody system to capture VEGF. The signal produced from the binding of aptamer-antibody to VEGF was from a fluorophore conjugated to the aptamer. The images of fluorescence signals taken were analysed using ImageJ. **Results & Discussion:** The lowest level of VEGF detected was 5 pg/ml which is lower than the 15 – 430 pg/ml of VEGF usually found in clinical samples. This 3D DEP microfluidic chip can be further developed to be a user-friendly device for the rapid, accurate and affordable detection of VEGF in dengue patients.

#### **P04 Content validity study of a newly developed scale to analyse the impact of COVID-19 pandemic on migraine symptoms**

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**Introduction:** Several studies analysing the impact of the COVID-19 pandemic on the existing migraine pain intensity, severity and frequency, had demonstrated mixed results. Furthermore, the related studies in Malaysia are limited, and importantly, there is no specific scale to analyse the effect of the pandemic on migraine symptoms. Therefore, this study aims to develop and validate a tool that can measure the impact of the COVID-19 pandemic on patients with existing symptoms of migraine. **Methods:** The scale development was performed in three steps (identifying content domain, generating items and constructing the instrument) followed by six experts confirming the items to ensure the content validity. The Content Validity Index (CVI), Kappa coefficient, Content Validity Ratio (CVR) and Cronbach's alpha were analysed. Additionally, for relevancy, all items were analysed for item level (I-CVI) and overall scale (S-CVI). **Results:** A 22-item scale has been developed and analysed for content validity. For relevancy, the I-CVI for each item ranged from 0.83 to 1. The S-CVI (UA) was 0.54. The S-CVI (Avg), depending on the I-CVI was 0.92 and the proportion relevance was 0.92. The Kappa statistics ranged from 0.81 to 1 for all items and the clarity CVI ranged from 0.83 to 1. The CVR ranged from 0.6 to 1. Moreover, Cronbach's alpha for relevancy and clarity were 0.859 and 0.884, respectively. **Conclusion:** The results show that the new instrument developed has high content validity. Further analysis will be directed to access reliability, construct validity by factor analysis and criterion-related validity for better applicability of instrument developed.

**P05 A challenging case of a lymphoma mimicker**

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**Introduction:** Primary mediastinal germ cell tumour (MGCT) accounts for less than 5% of germ cell malignancies and its manifestations can mimic lymphoma. We hereby present this challenging case of a possible MGCT that mimics haematological malignancy. **Case report:** A 23-year-old male presented with a 3-week history of cough, intermittent fever and weight loss. Clinically, there was mild hepatomegaly without splenomegaly and lymphadenopathy. Chest X-ray and computed tomography-scanned thorax showed a large mediastinal mass with laboratory investigations demonstrating anaemia, thrombocytopenia, leukocytosis and a raised lactate dehydrogenase level of 4500iu/L. The provisional diagnosis then was T-lymphoblastic lymphoma/ leukaemia. Peripheral blood film showed the presence of atypical mononuclear cells, some of which were immature blastic-looking. Subsequent investigations revealed a hypercellular marrow (90% cellularity), with both trephine and mediastinal mass biopsies showing diffuse infiltration of malignant cells, which are round with large pleomorphic nuclei. Further immunohistochemistry demonstrated that the tumour cells were negative for CD34, CD43, CD45, B- and T- lineage markers, which was suggestive of a non-haematopoietic malignancy, while excluding a germ cell tumour. However, tissues were exhaustive for further staining for definitive diagnosis. The patient succumbed due to the post-mediastinal mass biopsy bleeding complications. **Discussion:** Extra-gonadal germ cell tumours (GCT) are a rare subgroup of GCT, most of which arise in the retroperitoneum and anterior mediastinum. In general, MGCTs comprise 10-15% of all tumours in that area and often present as enlarged mediastinal masses mimicking lymphoma. Therefore, MGCT should be suspected if initial work-up is inconclusive especially in the context of young males presenting with mediastinal masses.

**P06 Adherence to public health measures for Covid-19, among young adults in the Klang Valley: A study of its predictors and exploration of associated mediating factors**Kai Wei Lee<sup>1,2</sup>, Sook Fan Yap<sup>1,2</sup>, Hooi Tin Ong<sup>1</sup>, Pooi Pooi Leong<sup>1</sup>, Nadia Mohamad Hatta<sup>1</sup>*<sup>1</sup>Department of Pre-Clinical Science&<sup>2</sup>Centre for Research on Communicable Diseases, Universiti Tunku Abdul Rahman, Selangor, Malaysia*

**Introduction:** The COVID-19 pandemic has brought disruption to many varied aspects of life. A key strategy to curb the infection is through the implementation of public health measures, the success of which depends on the compliance of the community at large. This study aims to determine the predictors of high levels of adherence to public health measures and explore the presence of any mediator effect between knowledge of COVID-19, attitude and adherence to public health measures. **Methods:** This was a web-based cross-sectional study conducted among university students in the Klang Valley. The questionnaires consisted of knowledge of COVID-19, attitude regarding the success in controlling COVID-19, confidence in Malaysia winning the battle against COVID-19, and adherence with public health measures. Multiple linear regressions were conducted to identify predictors of adherence to public health measures. Moderated mediation analysis was carried out using the Hayes PROCESS macro to assess mediation effects. Variables with a p-value <0.05 were considered statistically significant. **Results:** The results indicated that female gender (adjusted B coefficient=0.056, p=0.027) and good attitudes (adjusted B coefficient=0.053, p=0.001) were factors with significant influence on the compliance with preventive measures. Gender had no mediation effect between COVID-19 knowledge, attitude and adherence to public health measures (95% Confidence interval crossed 1). **Conclusion:** Female gender and good attitudes are the predictors for high adherence to public health measures. Mindfulness and motivation campaigns targeting the younger generation are recommended to raise their positive vibes and improve adherence to preventive measures.

**P07 Covid-19 risk perception, self-efficacy and coping among members of the UTAR community amidst the pandemic**Sook Fan Yap<sup>1,2</sup>, Kai Wei Lee<sup>1,2</sup>, Kai Shuen Peh<sup>3</sup>, Hooi Tin Ong<sup>1</sup>*<sup>1</sup>Department of Pre-Clinical Science, Faculty of Medicine and Health Sciences,**<sup>2</sup>Centre for Research on Communicable Diseases&<sup>3</sup>Department of Psychology and Counselling, Faculty of Arts and Social Science, Universiti Tunku Abdul Rahman, Selangor, Malaysia*

**Introduction:** Stringent movement restrictions due to COVID-19 have significantly impacted the entire spectrum of people involved in education, both staff and students alike. There is very little awareness of the risk perception, self-efficacy and coping strategies to deal with the stresses and strains brought about by movement restrictions. This is an assessment of the coping methods employed during the COVID-19 pandemic in the context of a university community and the influence of risk-perception and self-efficacy on the choice of coping methods. **Methods:** This study was conducted during the second wave of COVID-19 among staff and students of UTAR, Sg Long campus. Assessment of risk perception was based on contagion, susceptibility and the severity, and self-efficacy on self-protection and disease-avoidance ability. Coping methods were assessed using Brief COPE-28. Correlation between the risk perception, self-efficacy, and coping strategies are presented as correlation coefficients (CC) and p-values. Factors associated with adaptive and maladaptive coping were determined using multiple linear regression analysis. Variables with a p-value <0.05 were considered statistically significant. **Results:** The most frequently-used coping method was acceptance (70.5%). There was a significant relationship between adaptive coping and risk perception (CC=0.139), and self-efficacy (CC=0.145); likewise, between maladaptive coping and risk perception (CC=0.116). Multiple linear regression showed that younger age (p=0.046), high risk perception (p=0.002) and high self-efficacy (p=0.011) were predictors for adaptive coping. Younger age (p=0.012) and high-risk perception (p=0.024) were predictors for maladaptive coping. **Conclusion:** An association between coping methods, risk perception and self-efficacy has been demonstrated.

### **P08 Metabolomic profiling of plasma from aging male rats using liquid chromatography mass spectrometry**

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**Introduction:** One of the hallmarks of aging is characterised by metabolic dysfunction. However, comparison of metabolic changes across different age groups is lacking in model animals such as the rodent. We report the plasma metabolome of male Sprague Dawley rats at 6, 18, 21 and 24 months of age by untargeted metabolomic profiling using LCMS. **Materials & Methods:** We extracted the metabolites in the plasma from the aqueous layer of the Folch method and acquired the data using Orbitrap MS. Data was pre-processed with Compound Discoverer, analyzed statistically by MetaboAnalyst, and metabolite was identified by matching the accurate mass and MS2 fragment with the mzCloud database. Pathway analysis was constructed by MetaboAnalyst. **Results:** Combined with positive and negative ion modes, more than 2,000 molecular features with distinct molecular weight, retention time, and signal intensity above noise were obtained across different age groups. We have annotated more than 150 metabolites and 25 of their levels were significantly different by age. **Discussion:** Aging is associated with increased bile salt metabolism and mixed response in amino acids metabolism. The significant different metabolites and pathway might serve as circulating biomarkers for aging in the rodent. Further studies are warranted to understand the roles of these metabolites in mediating the molecular and physiological changes during aging.

### **P09 Occurrence of *Legionella sp* and *Methylobacterium sp.* in a Lakeside Tertiary Institute in northwestern West Malaysia**

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**Introduction:** Legionnaires' disease is a severe form of pneumonia caused by *Legionella species* that is frequently found in artificial water systems. *Methylobacterium sp.* are emerging opportunistic plumbing pathogens that have been reported in immunocompromised patients. **Materials & Methods:** A cross-sectional study was conducted, and 82 water samples were collected from multiple water sources (water cooling tower, water storage tank and water faucet) in a lakeside tertiary institute from 19<sup>th</sup> April 2018 to 25<sup>th</sup> September 2018. Samples were processed and identified according to standard laboratory procedures. Samples that were unidentified using latex agglutination tests were sent for PCR confirmation. **Results:** In total thirty-two samples grew on Buffered Charcoal Yeast Extract agar, twenty-six (81.3%) samples were *Legionella sp.* of which twenty-five were *L.pneumophila* and one was *Legionella geestiana*. *Methylobacterium sp.* (6 samples, 18.7%) was discovered accidentally following PCR confirmation. **Discussion:** Among all water samples collected from the tertiary institute, prevalence of *Legionella sp.* and *Methylobacterium sp.* growth accounted for 31.7% (26/82) and 7.3% (6/82) respectively. Water sources of these samples originate from water tanks and toilet faucets from various buildings throughout the tertiary institute. The ability of the formation of the biofilm in the inner layer of pipeline could be the reason for three times more *Legionella pneumophila* detected in faucets than in water storage tanks. This reveals that the water sources within the said tertiary institute are heavily colonised by *Legionella sp.* and *Methylobacterium sp.* It raises concern for potential sources of health threats and requires implementation of management actions.

### **P10 Carpal tunnel release: A review of landmarks in surgical techniques**

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**Introduction:** Ambiguity exists in the landmarks for carpal tunnel release (CTR). Kaplan's cardinal line (KCL) is not parallel to the proximal palmar crease and starting point of KCL is a moving reference point. The flexed ring finger does not point towards the carpal tunnel. The thenar crease incision results in pillar pain and endangering the palmar cutaneous branch of the median nerve. **Methods:** A systematic review of all studies and literature search was done using PubMed/Medline database and the Cochrane Central Register of Clinical Trial. The surgeons/authors' preferred technique is the limited 1.5 to 2cm incision open CTR. The KCL, line along the borders of the ring finger, thenar crease and midpoint between the scaphoid and hamate bones are marked. The incision is placed on the median crease which is ulnar to the thenar crease. K-wire marker is placed over the incision and the landmarks and an x-ray is taken. **Results:** The k-wire identification of the carpal tunnel is consistent with the median crease and midpoint between the scaphoid and hamate bones. **Discussion & conclusion:** The anatomical landmark depends on the width of the hand and variations of the thenar muscle. The location of the CTR is not consistent to the KCL or flexed ring finger. The incidence of pillar pain is 6-36%. The Null Hypothesis is that the median crease is the landmark for CTR incision which is ulnar to the thenar crease and midpoint between the scaphoid and hamate bones. This crease line may or may not be present.

**P011 Advanced trauma life support: A review**Wisam A Yassin<sup>1</sup>, Nagem Farouk Abed<sup>1</sup>, Ali M. Fahmi<sup>2</sup>, Ahmed W. Khalid<sup>1</sup><sup>1</sup>Faculty of Medicine and Health Sciences, *Universiti Tunku Abdul Rahman, Selangor, Malaysia*<sup>2</sup>*Azadi Teaching Hospital, Shorja, Kirkuk, Iraq*

Injury is cellular damage caused by ecological energy beyond the body's resilience, leading to cell death due to ischaemia. For individuals between the ages of 1 - 44 years, trauma is the commonest cause of death, while it is the third most common for all ages. Recently, the World Health Organisation announced that 4.4 million people would die due to unintentional injuries and violence each year globally. As a result, injuries and violence incur an enormous burden on national economies, costing countries billions of US dollars each year. These alarming figures illustrate the importance of implementing the well-established "ADVANCED TRAUMA LIFE SUPPORT" (ATLS) protocol. However, statistics revealed that in most developed countries, the advancement in injury management protocols and practice is having an obvious impact on lowering the curve of injury-related deaths. In contrast, deaths due to motor vehicle crashes are expected to rise dramatically in the next several years in developing countries. This updated and concise review on identifying and treating life-threatening and potentially life-threatening injuries provides doctors with the essential information when dealing with high energy injuries. It includes the assessment and management of these casualties starting from the pre-hospital phase. The most updated steps of emergency medical care which were recently modified are well illustrated as well as the most critical alerts are well highlighted. Furthermore, the management measures are presented in summarized tables to be easily and directly accessible. In short, this review is considered as a concise reference for the management team for fast revision when approaching severely injured patients.

**P012 Effect of normal sitting posture versus slump sitting posture on resting heart rate among university students**Khai Hooi Hor<sup>1</sup>, Mahadevi Barathi<sup>2</sup>, Voon Sin Yee<sup>3</sup><sup>1</sup>*Alpro Physio*<sup>2</sup>*Department of Physiotherapy, Faculty of Medicine and Health Sciences, Universiti Tunku Abdul Rahman*<sup>3</sup>*Faculty of Medicine and Health Sciences, Universiti Tunku Abdul Rahman Selangor, Malaysia*

Introduction: University students use smartphones, laptops and tablets very often. The posture adopted tends to be the slump sitting posture which may affect pulmonary or cardiac function. A higher resting heart rate (HR) can increase the risks of cardiovascular disorders in the future. Previous studies have compared postures such as standing, sitting and supine, but none have compared the different sitting postures focusing on cardiac function. Hence, this study was carried out to determine the effect of normal sitting posture and slump sitting posture on resting HR among university students. Materials & Methods: Forty-three healthy university students participated in this study. Resting HR was recorded for each participant with a pulse oximeter for the normal and the slump sitting postures. Participants assumed each posture for five minutes, after which two measurements of HR were taken. The average of the two readings was used. Results: The data collected was analyzed using SPSS Statistics version 22. A related 't' test was selected and results showed that there is a significant difference ( $p < 0.05$ ) in the resting HR between the normal and slump sitting postures among university students, which rendered the null hypothesis rejected. Discussion: The plausible explanations for the increase in HR in the slump sitting posture may be due to changes in the pulmonary function and blood circulation. For health considerations, this study improves awareness of the effects of the duration of use of these devices on sitting posture and resting HR.

**P013 Challenges and benefits faced by UTAR medical students during E-Learning for the Bioethics and Humanities course during the Covid-19 pandemic**

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The sudden outbreak of Covid-19 has immensely affected the educational system around the world. Due to the highly contagious nature of the disease, educational institutions across the globe were forced to shut down as a measure to prevent the spread. During these times, online teaching and learning have emerged as a new way to substitute the traditional face-to-face teaching in continuing education. The e-learning mode is being applied to every university's study method; hence the teaching and learning activities for medical ethics were also conducted online. Many approaches have been used for the students to practice various ethical principles and behaviour, such as brainstorming and discussion. These are applied for case studies, group presentations, individual assignments and other online activities. Throughout the E-learning process, students encountered several challenges during the postings such as poor time management, lack of physical access causing asynchronous teamwork, emotional problems due to huge workload, and lack of real-life demonstrations leading to uncompassionate feelings towards patients during case studies. Nevertheless, there was a positive acceptance for this new learning method and students could cope with the several solutions. These include referring to shared planners or schedules for reminders, increased frequency and duration for meetings and informed discussions throughout the posting. The need of the hour was and is to adjust the positive mindset towards the changes in the mode of study and to have more role-play demonstrations for case studies, which helped the students to finish their assigned tasks on time without facing much difficulty. Moreover, e-learning with the active application of multiple multimedia resources during the ethics teaching and learning also positively impacted the learning outcomes.

**P014 Adaptability, perception and practice of students on switching towards online teaching and learning of bioethics during Covid-19 pandemic**

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Introduction: Adaptability is a soft skill that enables a person to be flexible in rapidly learning new skills and alter certain characteristics and behaviour in response to adversities of life, changing circumstances, unpleasant working conditions when situations do not go as planned. The swift technological transformation seen in education due to Covid-19 pandemic has pushed an experiential learning experience for both the staff and students of FMHS. It also highlighted the need of continued developing and refining of the robustness of teaching/learning methodologies for future-proofing the ever-changing education system. The hypothesis that online tools and internet-based technologies enable educators by providing new ways to deliver material and create opportunities for the students to collaborate and become active partners in education was tested. The objective was set to assess students' adaptability and perception towards online teaching/learning activities and their self-perceived effectiveness and satisfaction of using online tools (created from the Internet) in their presentation, discussion, role play and debates needed in the ethics course. Determination on the extent to which educators can adapt to the rapid changes and overcome the challenges concerning equity of resources and maintaining academic integrity was also done. Materials & Methods: An institutional-based cross-sectional survey was carried out on Year2 TCM students studying the Bioethics and Medical Humanities Course (June to August, 2021) using a pre-tested semi-structured questionnaire. A visual/auditory/read and write/kinesthetic (VARK) preference tool was used to categorise students' learning styles. Adaptability scoring was done using the Likert Five-point Response Scale. Results: Perception scale in learning bioethics showed high scoring in adaptability and collaboration, as well as good satisfaction in the content and delivery indicated the students' ability to adapt well. Adaptive capacity of students was seen mainly as the result of understanding the core ethical and humanistic values and the habit to reach out for help which also indicates the importance of support, mentorship and guidance of educators to help students during tough times, individually, and in accordance to their strengths and weaknesses (learning styles). The areas of support in most need can be seen in shifting gears to rapid change in T/L activities (3.6), developing new ideas in place of old (1.7) and accepting failures as opportunities (1.8) for innovation meaning the students need to accept failures as opportunities to learn from it instead of getting depressed and complaining. Discussion: Overall, the excellent adaptive capacity of the students is supported by the course outcome where the summative (knowledge) and formative (skill/behaviour) scores in the continuous assessment were excellent (scoring 70% and above).

**P015 Knowledge, Attitude and Preventive (KAP) practice on obesity among UTAR Sungai Long Campus students**

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Introduction: 15% of adults aged 20-29 in the state of Selangor were reported to be obese as the prevalence of obesity in Malaysia increases dramatically despite public health interventions. Materials & Methods: A cross-sectional study was conducted among 445 undergraduate students aged 18-25 years of age from the various faculties in the Sungai Long campus of UTAR. The respondents' information on their socio-demographic parameters, lifestyle measures, knowledge and attitude on obesity were documented via self-reporting using an online questionnaire. Results: 28.1% of respondents were from the Faculty of Medicine and Health Sciences (FMHS) while 71.9% were from the other faculties. 95.5% and 78% of the respondents have good knowledge and attitude on obesity but only 43.1% had good preventive practice. FMHS students have significantly higher knowledge ( $p < 0.001$ ) and attitude ( $p = 0.018$ ) but their preventive practices were similar with students from the other faculties. There was a significant association between the frequency of using the food ordering and delivery service and attitude ( $p < 0.001$ ). Significant correlations were present between knowledge with attitude on obesity ( $p < 0.001$ ) and attitude with preventive practice ( $p < 0.001$ ). Discussions: This study shows that, generally, despite the respondents' good knowledge about and attitude on obesity, they do not have adequate preventive practices against obesity. Interestingly, students from medical and health sciences have significantly better knowledge and attitude, but they did not have better practices compared with the other students. A good understanding/awareness on obesity may have better attitude to prevent obesity, but good attitude is more important in sustaining the good practices for the prevention of obesity.

**P016 Cluster of differentiation markers difference in Wharton's jelly mesenchymal stem cells cultured in different culture conditions**

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Introduction: One of the criteria to define mesenchymal stem cells (MSC) proposed by The International Society of Cellular Therapy (ISCT) is that  $\geq 95\%$  of the cells population must express cluster of differentiation (CD), CD105, CD73 and CD90 when measured by flow cytometry. Hence, the objective of this study is to determine the optimal culture conditions and passage for Wharton's Jelly Mesenchymal Stem Cell (WJ-MSC) to be used in studies according to their CD expression. Materials & Methods: Passage one WJ-MSC sponsored by Cryocord Sdn. Bhd. (LOT#: RUCM1390) were cultured and expanded in different culture medium namely 1) Dulbecco's Modified Eagle Medium-Low Glucose (DMEM-LG), 2) Dulbecco's Modified Eagle Medium-High Glucose (DMEM-HG), and 3) Dulbecco's Modified Eagle Medium-Ham's F-12 (DMEM-F12) supplemented

with 10% Fetal Bovine Serum and 1% Penicillin-Streptomycin. The CD markers pertaining to WJ-MSC (CD73, CD90 and CD105) were characterised using a commercial characterisation kit (BD BioSciences, USA) and analysed using flow cytometry at passage 3 and passage 5. Results: Although all cultures were plastic adherent, only the CD expression of passage 3 WJ-MSC cultured in DMEM-LG fulfill the criteria proposed by ISCT. WJ-MSC cultured in DMEM-HG and DMEM-F12 as well as those of passage 5 have a slightly lower expression of CD90 and CD105 as compared to the ISCT proposed criteria. Discussion: CD105 (endoglin) involved in cytoskeletal organisation affecting cell morphology and migration while CD90 plays a role in cell adhesion and migration. Present findings demonstrate that early passage WJ-MSC cultured in DMEM-LG maintained their MSC immunophenotype.

**P017 Adequacy of facilities in homes for the elderly located in Northern Peninsular Malaysia for ensuring the safety and wellbeing of the elderly residents**

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Introduction: There has been a rapid growth in the number of homes for the elderly in Malaysia. Being physically and mentally active are important factors in improving the quality of life of the elderly. This study aims to determine the adequacy of facilities in homes for the elderly located in Northern Peninsular Malaysia. Materials & Methods: In this descriptive cross-sectional study, eight homes for the elderly located in Perlis, Kedah and Penang, Malaysia were assessed based on our set criteria. The data obtained were analyzed using SPSS version 23 software. Results: The overall score for each aspect for the eight homes for the elderly in Perlis, Kedah and Penang, Malaysia was 54.98% which is slightly above the cut-off point of 50%. Almost half of these homes for the elderly do not meet the living requirements of the elderly population. As such these homes do not have handrails installed on walkways or non-slip mats placed on bathroom floors to prevent falls. They also lack nearby amenities such as a garden where the elderly can perform their active daily exercises such as gardening or provisions of single rooms and private storage spaces for those who prefer privacy. Discussion: As we progress from a developing to a developed nation, homes for the elderly could be a dominant form of community-based care for the dependent elderlies due to the hectic lifestyle of the younger generation. Hence, all the homes for the elderly should be equipped with adequate facilities to ensure the safety and wellbeing of the older generation.

**P018 Frequency of exercise on Body Mass Index among young adult population**

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Introduction: Physical activity has long been shown to be able to induce weight loss and prevent weight gain. Interestingly, there are many physically active but obese and overweight individuals around. Therefore, this study aims to explore the frequency of exercise in preventing weight gain, weight loss, weight maintenance and the obesity paradox. We believe that physical activity alone is not the solution for obesity but rather a more holistic approach is required. Materials & Methods: A total of 130 healthy participants age between 15 to 24 years were recruited via convenient sampling for this retrospective cross-sectional study. Ethical approval was obtained from AIMST University and complied with the Declaration of Helsinki. Participants who do not maintain the current exercise frequency for at least one year were excluded from this study. The weight (kg) and height (m) of the participants were measured to determine the body mass index (BMI) and the participants were interviewed on their weekly exercise frequency. The findings were interpreted using chi-square via SPSS version 26. Results: Present findings reported that 10% and 6.15% of our study population were obese and overweight. 23.85% were leading a sedentary lifestyle, 39.23% exercised at least one to two times per week, 26.15% exercised three to four times per week and 10.77% exercised more than four times per week. The association between exercise frequency and BMI was not significant (df=9; P>0.05). Discussion: Although past studies reported physical activities to help combat obesity, our findings reported that leading a physically active life alone is insufficient to combat the onset of obesity.

**P019 Relationship between physicians and the medical manufacturing industry: Perceptions of Malaysian medical students and implications on medical education**

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Introduction: The relations between physicians and the medical manufacturing industry, including pharmaceutical, medical device or implants or life science industry etc., are well known. To promote a better physician-patient relationship and safeguard patients' interests, many have proposed to make physician-industry financial relations transparent and accessible to the public. This study aimed to explore the Malaysian medical students' perceptions towards these relationships and the implications on

medical education. **Materials & Methods:** A survey questionnaire was specifically prepared to meet the objective of the study after a review of the existing literature. Statements describing various types of physician-industry financial interactions were formulated based on previous research. The participants were instructed to mark their response to each statement based on a 5-point Likert scale ranging from strongly disagree to strongly agree. **Results:** Less than half (40.5%) of the participants were aware of the relationships between physicians and MMI, and an online database was noted to be the most preferred type of disclosure. Females found MMI-physician relationships more acceptable than their male counterparts. The age, race, year of study (preclinical or clinical) did not influence the perceptions. **Discussion:** Since medical students are budding doctors and are likely to deal with MMI representatives during their careers, we tried to explore their perspectives. Most of them are not even aware of these relationships. The findings of this study support the inclusion of formal training of medical students on proper conduct in dealing with MMI representatives.

#### **P020 Distribution of *Legionella pneumophila* sequence types in a premise plumbing system**

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**Introduction:** *Legionella pneumophila* is an aquatic bacterium that often contaminates commercial and domestic water supply systems, rendering them potential sources for outbreaks of legionellosis. In this study, the premise plumbing system in a lakeside community was examined for *L. pneumophila* colonization. **Materials & Methods:** Water samples were collected from 32 water tanks and 32 faucets, each linked to a tank. *L. pneumophila* isolates from these samples were serogrouped with group 1 and group 2-15 antisera and genotyped using Sequence-Based Typing (SBT) with 8 genes, *flaA*, *pilE*, *asd*, *mip*, *mompS*, *proA*, and *neuA/neuAh*. The concatenated sequence of these genes for each isolate was given an ST number and all STs were used for phylogenetic tree construction using Mega software with the Kimura 2-parameter model. **Results:** Twenty-three *L. pneumophila* isolates were obtained from 7 (22%) water tanks and 16 (50%) faucets. They formed three phylogenetic clusters comprising (I) serogroup 1, ST1 (5 strains), (II) serogroup 2-15, ST 3017 (8 strains) and (III) serogroup 2-15, ST3027 (8 strains). Two new STs strains had yet to be assigned ST numbers, formed a small subgroup in cluster I. **Discussion:** The colonization of the premise plumbing system by a small number of *L. pneumophila* STs suggests extensive cross-contamination in the plumbing system. The larger number of isolates from faucets compared to their feeder water tanks is likely due to biofilm formation upstream to the faucets. The lakes surrounding the premise buildings could be the source of *L. pneumophila* in the plumbing system.

#### **P021 Genetically engineered human umbilical cord-derived mesenchymal stem cells expressing human interleukin-12**

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**Introduction:** Interleukin-12 (IL-12) is a key immunomodulatory cytokine with antitumour effects. However, the systemic administration of IL-12 at therapeutic dosage leads to serious toxicity in cancer patients due to the induction of extremely high systemic level of interferon- $\gamma$ . Mesenchymal stem cells are promising cellular vehicles for cancer therapy. They are highly amenable to transduction by viral vectors to express and deliver exogenous proteins to tumour sites due to their tumour homing ability. In this work, we transduced human umbilical cord-derived mesenchymal stem cells (hUCMSC) with adenoviral vector expressing hIL-12. **Materials & Methods:** The hIL-12 gene was first cloned into linearised pAdenoX-ZsGreen1 using Adeno-X<sup>TM</sup> Adenoviral System 3. The linearised recombinant adenoviral plasmid was then packaged into recombinant adenovirus using HEK293 cells and further amplified and purified. Viral titres were determined using Adeno-X<sup>TM</sup> qPCR titration kit and plaque forming assay. The presence of hIL-12 gene in the AdhIL-12 was evaluated with PCR. Multiplicity of infection (MOI) 10 was selected to infect hUCMSC and the expression level of hIL-12 and cell viability of the hUCMSC was determined post transduction using ELISA and Cell Counting Kit-8 respectively. **Results:** The transduced hUCMSC showed moderate transduction efficiency (54.5%) but high hIL-12 protein expression (6.78 $\mu$ g/ml) compared to control hUCMSC (<4pg/ml hIL-12 protein expression) while maintaining high cell viability post-transduction. The hIL-12 protein expression level was increased continuously up to day 5 post-transduction. **Discussion:** Genetically engineered hUCMSC expressing hIL-12 using the adenoviral vector can be potentially utilised as cellular vehicles in cancer therapy to overcome the systemic toxicity of IL-12.

#### **P022 Comparing private and public universities: Prevalence of depression and associated stressors among medical students**

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**Introduction:** The deterioration of mental health among medical students has been recognised as a critical issue. The objective of this study was to compare the prevalence of depression and associated stressors among medical students from a public and a private university. **Materials and Methods:** This was a cross-sectional study that started in late 2015 for a one-year data collection period among medical students of UCSI University and Universiti Sultan Zainal Abidin (UniSZA) using the universal sampling method. The self-administered questionnaire consisted of sociodemographic characteristics, Beck's Depression Inventory-II and Medical Student Stress Questionnaire. Descriptive analysis, univariate and multivariate logistic regression were carried out using SPSS version 20.0 software. **Results:** The prevalence of depression among medical students in UCSI University and

UniSZA were 35.2% and 26.1% respectively. UCSI University reported a higher depression mean score of 12.24 (9.29) compared to UniSZA 9.67 (SD 7.39); statistically significant ( $p < 0.001$ ). Both universities ranked Academic and Group Activity related stressors as of high severity. Only Academic and Drive and Desire related stressors were found to be significantly associated with depression among medical students in both universities. Discussion: The prevalence of depression among medical students in the private university was higher than the public university. Review of the academic curriculum, support and counselling services, mental health education and stress management workshops are highly recommended to help students maintain optimal mental health. The results of this study conducted before the event of the Covid-19 pandemic can be used as a comparison for studies on depression among medical student conducted during the Covid-19 period.

**P023 Coping strategies practiced by medical students and their association with depression: Comparative study between public and private universities**

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Introduction: Medical students are vulnerable to depression. Attending a public or private medical university may differ in their mental health outcomes and coping strategies practiced. The objective of this study was to determine and compare the coping strategies practiced and its association with depression among medical students from a private and public university. Materials & Methods: A cross sectional study was conducted that required medical students from UCSI University and Universiti Sultan Zainal Abidin (UniSZA) to complete a self-administered questionnaire with a socio-demographic section, Beck's Depression Inventory-II and Brief-Coping Orientation to Problems Experienced Inventory. Results: It was found that UCSI University medical students had a greater prevalence of depression, which was significantly associated with the year of study. Socio-demographic variables that were significantly associated with depression in UniSZA were age, ethnicity and frequency of exercise. Source of tuition fees was significantly associated with depression in both university students. The most practiced coping strategy was active coping in UCSI University and religion in UniSZA. The coping strategies significantly associated with depression included active coping, denial, behavioural disengagement, venting, self-blame and planning in both universities, with humour only significantly associated with depression among UCSI University students. In contrast, emotional support, instrumental support and religion were significantly associated with depression in UniSZA medical students. Discussion: High-risk student groups should be identified and workshops addressing effective coping strategies should be held for the medical students from both universities. It is also recommended that these findings obtained pre-pandemic be used in comparing studies conducted during the COVID-19 pandemic, on depression and coping strategies.

**P024 Perspectives of medical students regarding qualities of an effective teacher**

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Introduction: To produce skilled practitioners, medical institutions emphasize effective teaching. The traits of an effective medical teacher have been widely debated and researched over the years. We surveyed the characteristics of an effective teacher from medical and dentistry students' perspectives. Materials & Methods: A cross-sectional study design was used. Statements on qualities of effective teachers based on literature review and expert opinion in a questionnaire format were prepared and administered to medical and dentistry students using Google forms. The participants marked their responses to each statement based on a 5-point Likert scale from strongly disagree to strongly agree. Four themes emerged from the questionnaire statements, viz. Classroom behaviour, interaction with students, personal qualities and professional development. Responses were analyzed for discipline (medical/dentistry), race, gender and year of study. For bivariate analysis, t-test and one way ANOVA were used. Results: Our study's top three qualities of an effective teacher were "communication skills", "subject knowledge", and "enthusiasm while teaching". Clinical year students ranked "classroom behaviour" higher than the pre-clinical students who ranked "personal qualities" the highest. The "leadership qualities" were ranked the lowest by both medical and dentistry students. Discussion: We found no differences in students' perspectives according to gender, race, or study discipline. In the literature review, most of the studies found subject knowledge to be the top desired trait of an effective teacher. Similarly, knowledge of the subject was one of the top three qualities that students' perceived as important in this study.

**P025 A new training need assessment tool for non-communicable disease prevention education**

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Introduction: Non-communicable diseases (NCD) are a major burden to the health system contributing to 70% of death globally. The major risk factors for NCD were unhealthy lifestyle behaviour. To overcome the situation, continuous NCD prevention education by the community health volunteer (CHV) plays a pivotal role in behavioural change. Educating the community requires specific training that meets the training-needs of the CHV. However, there was no specific training need assessment tool for NCD prevention education. On that account, the paper aims to develop a specific tool for it. Materials & Methods: The tool was developed by using the Nominal Group Technique involving four experts. It has 14 items with two scales. There was the self-efficacy and importance rating scale. The scale ranges from one to ten points. After the development, face and

content validation were conducted involving ten experts. Results: The S-FVI was 0.94 with the lowest I-FVI at 0.80 while the S-CVI was 0.96 and the lowest I-CVI was 0.90. Discussion: The FVI for each item was above the acceptable limit, with only item 4 being below 0.83. However, no changes were made to the item as all experts agree the term 'self-examination' was comprehensible. Meanwhile, the CVI was above the acceptable limit. Both the FVI and CVI indicate that the items were valid to measure the intended construct.

#### **P026 Physical activity, sleep quality, injury and their associations among medical and health sciences students**

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**Introduction:** Active lifestyle and quality sleep are crucial for health and wellbeing. These also have been associated with enhancing cognitive skills and memory retention, which is vital for students. Medical and health sciences students are exposed to tremendous workload and study hours in the clinical and non-clinical setting, often at the cost of physical activities and sleep. Lack of quality sleep could hamper academic ability and expose students to musculoskeletal injuries. However, there is limited data on the level of physical activity, sleep quality, injury and their association. Therefore, this study aims to explore the level of physical activity, sleep quality, injury and their association among medical health sciences students. **Materials & Methods:** It was a cross-sectional study conducted among medical and health sciences students. International Physical Activity Questionnaire, Pittsburgh Sleep Quality Index, and Nordic Musculoskeletal Questionnaire were used to assess the level of physical activity, sleep quality, and prevalence of injury, respectively. **Results:** Among 115 students, the majority (49.6%) was minimally active, 53% had poor sleep quality, and 80% sustained at least one injury in the past 12 months. Of these, the most common injuries were to the spine particularly the neck, followed by the upper limb, shoulder, lower limb and the knee. There is no association between physical activity, sleep quality, and injury being observed. **Conclusion:** Medical and health sciences students are minimally active with poor sleep quality and are susceptible to neck injuries. These findings necessitate an intervention to increase the students' healthy lifestyle and to prevent injuries.

#### **P027 *Centella asiatica* (L). Urban attenuates mitochondrial changes in the hippocampus of chronically stress-induced Wistar rats**

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**Introduction:** Depression is one of the outcomes of chronic stress. The excess glucocorticoids secreted during chronic stress produces ultrastructural changes in the mitochondria of hippocampal neurons in the brain. *Centella asiatica* (CA) is an herb having neuroprotective properties. **Materials & Methods:** Thirty-six male Wistar rats were acclimatised to laboratory conditions in six groups with six rats in each group. Group 1 was control, group 2 was model, and group 3 was given fluoxetine (10 mg/kg body weight [BW]), while groups 4, 5, 6 were given an extract of CA at dosages of 200, 400 & 800 mg/kg BW orally. Chronic stress was induced in groups 3-6 by administering nine different stressors for 64 days, after which the animals were euthanized. Blood was collected for measuring glucocorticoid levels and brains for imaging of the hippocampus using Transmission Electron Microscopy (TEM). **Results:** The model group of rats showed an increase in blood cortisol levels and the mitochondria of hippocampal neurons exhibited loss of cristae, change of shape, vacuolation and breakage of the membrane, all of which were attenuated by the CA extract. **Discussion:** Prolonged stress is called chronic stress which causes depression. The increase in cortisol levels correlates with the levels of chronic stress while the mitochondria of the hippocampal neurons show ultrastructural changes. The extract of CA at dosages of 400 & 800 mg/kg BW, normalises the cortisol levels and mitochondrial changes, with an effectiveness similar to that of fluoxetine. Hence CA could be a potential anti-depressant.

#### **P028 Differential expression of hsa-miR-7977 and hsa-miR-4299 during reprogramming of spinal muscular atrophy patient fibroblasts into induced pluripotent stem cells (iPSCs)**

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**Introduction:** Spinal muscular atrophy (SMA), a devastating neuromuscular genetic disease, is caused by low levels of survival motor neuron (SMN) protein. SMA patient-specific induced pluripotent stem cells (iPSCs) generated from SMA patient fibroblasts have promising potential applications in the field of regenerative medicine. However, it is not clear whether the reprogramming process could lead to aberrant expression patterns of miRNA which might affect the *reprogramming* efficiency. Hence, this study

aims (i) to identify differentially expressed miRNA in SMA fibroblast-derived iPSCs as compared to parental SMA fibroblasts using miRNA microarray and (ii) to associate the identified miRNA with their target genes and pathways involved. Materials and Methods: Total RNA from SMA fibroblasts and its derivative iPS cell lines was extracted. The miRNA microarray was performed to acquire the differentially expressed miRNAs. The putative target genes of the identified miRNAs were predicted using TargetScan, miRDB, DIANA-microT-CDS and miRWalk. The common elements of the four databases were selected as the target genes. The biological functions of the targeted genes were performed by ToppGene. Results: Five miRNAs were downregulated and one miRNA was upregulated in SMA fibroblast-derived iPSCs as compared to SMA fibroblast. The upregulated hsa-miR-7977 and the most significantly downregulated hsa-miR-4299 were selected for further analysis. Integration of the predicted genes of both miRNAs showed ten common target genes. Discussion: The identified miR-7977 and miR-4299 regulate the key targets genes that have a critical role in the cGMP-PKG signalling pathway during iPSCs reprogramming process.

**P029 The beneficial effect of epigallocatechin-3-gallate (EGCG) on the vascular function of spontaneously hypertensive rats**

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Introduction: Epigallocatechin-3-gallate (EGCG), a major catechin found in green tea, is claimed to reduce the risk of cardiovascular diseases. EGCG has been shown to lower the blood pressure of hypertensive subjects but whether the decrease is contributed by its vascular protective mechanism is yet to be elucidated. The current study investigated the vasoprotective action of EGCG in hypertensive animals. Materials and Methods: Wistar-Kyoto (WKY) rats and spontaneously hypertensive rats (SHR) were divided into four groups; WKY control, SHR control, SHR treated with EGCG (50mg/kg/day) and SHR treated with losartan (10mg/kg/day). The treatment was given daily for 4 weeks by oral gavage and the blood pressure was monitored by tail-cuff method every 3 days. Acetylcholine-induced endothelium-dependent and sodium nitroprusside-induced endothelium-independent relaxations were assessed in isolated phenylephrine-contracted aortic rings at the end of treatment. The levels of reactive oxygen species (ROS), tetrahydropterin (BH<sub>4</sub>) and cyclic guanosine monophosphate (cGMP) were also measured. Results: After 4 weeks of treatment, the systolic blood pressure was significantly decreased in SHR treated with EGCG and losartan group. In line with this, endothelium-dependent relaxation was significantly improved in aortic ring isolated from EGCG and losartan-treated SHR groups. There is also a decrease in the ROS level of these animals. Besides that, the levels of BH<sub>4</sub> and cGMP were also significantly increased in SHR treated with EGCG and losartan respectively. Discussion: In conclusion, this study shows that EGCG improves the vascular function of SHR by reducing oxidative stress which in part may have contributed to the decrease in blood pressure of the animals.

**P030 The effect of different mouthwash formulations on the formation of *Candida albicans* biofilms**

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Introduction: Biofilms play an important role in infectious diseases. Around 60-80% of infections are associated with biofilms. In the human oral cavity, *Candida albicans* and *Streptococcus mutans* are two important microorganisms that can cause mucosal infections and caries. This study aimed to assess the effectiveness of various over-the-counter mouthwash formulations on the formation of *C. albicans* and mixed *C. albicans-S. mutans* biofilms. Materials & Methods: Standardized broth cultures of *C. albicans* or *C. albicans-S. mutans* were inoculated into micro plates and incubated at 37°C for 90 min. The nascent biofilms were then treated with 1ml of non-alcoholic mouthwashes (brands: Listerine, Oradex and Denticare) or phosphate buffered saline (PBS) for 15, 30 and 45s. After 2 additional washings with PBS, the plates were incubated for another 24h. The biofilms formed were then quantified using a crystal violet assay. Results: For mono-species *C. albicans* biofilms, exposure to mouthwashes caused a significant reduction in the biofilm mass with Listerine and Oradex showing a greater inhibition than Denticare. For the mixed *Candida-S. mutans* biofilms, all the three types of mouthwashes appeared to be equally effective in the inhibiting biofilm formation. Discussion: The findings of this study suggest that routine gargling with aseptic mouthwash may curb the formation of oral biofilms with an efficiency that varies with different mouthwash formulations and oral microorganisms.

**P031 Students' perspectives for using virtual classroom role-playing to discuss case studies in Bioethics**

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Introduction: This research aims to study the efficacy of role-playing in discussing case studies in providing a pragmatic and immersive environment to learn facts and concepts of Bioethics. Materials & Methods: The virtual classroom role-playing included cases discussed via Microsoft Teams (Online Teaching and Learning Mode). Students were divided into groups and were allotted different case studies. The lecturers provided Microsoft Team channels for each group, and WhatsApp, Google Drive, Google Docs and Google Slides were used in completing case studies. Results: Role-play method is used to discuss the case studies. This method enables us to understand the dynamic interaction between the cases' professional, legal, humanitarian, and ethical aspects. A clearer understanding of why and how the four elements may not agree in certain scenarios. Role-playing helps us to be more adaptive to real-life situations. Thus, decision-making is much more realistic and logical. Furthermore, role-playing made learning bioethics more interesting as we have to imagine ourselves as characters and make the decisions

along with debates among different characters. Throughout this time, teamwork is a crucial element in cooperating with our group-mates to make the whole process workable and streamlined. On the other hand, role-play and group discussion regarding the case study always creates an active learning environment for us, leading to having distinct opinions that usually arise among group-mates and invoking deeper thinking about the dilemmas. Discussion: In conclusion, role-playing has helped us learn a lot from the case studies and have provided a basic framework to solve the difficulties in future medical practices.

**P032 Knowledge in using pulse oximeter as a home assessment tool during COVID-19 pandemic among the community in Malaysia**

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**Introduction:** The emerging novel coronavirus SARS-CoV-2 is notorious for its capability to cause hypoxia among COVID-19 patients who may clinically appear normal. With the rapid increase in asymptomatic or mild symptomatic cases that required mandatory home quarantines, the correct use of pulse oximeter for early detection of hypoxia has become a game-changer in the COVID-19 crisis management. This research aims to determine the degree of knowledge in using pulse oximeter as a home assessment tool. **Materials & Methods:** An online cross-sectional survey was conducted from 26 August to 9 September 2021. The questionnaire consisted of 20 items in assessing the knowledge in using a pulse oximeter and the factors which affect accuracy of readings. **Results:** The mean score in knowledge assessment is 54%, with about two-third of the respondents scoring above 50%. About 90% of the respondents recognized the normal pulse rate and blood oxygen saturation levels of a healthy adult, 70% of the respondents recognized the definition of silent hypoxia. Majority of the respondents agreed that poor blood circulation, excessive movements and hand position affect accuracy of the readings. The more pressing worry is more than 60% of the respondents were not aware that nail polish, skin colour and thickness, henna/tattoo may affect oximetry readings. **Discussion:** The degree of knowledge in using pulse oximeters is average among the community in Malaysia. Continuous effort in educating the correct usage of the pulse oximeter is crucial as a home quarantine assessment tool for early detection of silent hypoxia.

**P033 The establishment of iPSC derived MSC for regenerative study**

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**Introduction:** Mesenchymal stem cells (MSCs) have been well-known for their therapeutic potentials in stem cell regeneration, anti-inflammation, as drug delivery vectors and tumour-related treatment. The study of MSCs has shown promising regenerative and immunomodulation effects in rat models and several clinical trials, while in cancer treatments, both, tumour promoting and suppressing effects were observed. While there is a limitation in obtaining large quantities of homologous MSCs for study and treatment, an alternative approach was to produce iMSCs that can overcome this issue. **Materials & Methods:** In this study, induced-MSCs (iMSCs) were derived from NTA-induced pluripotent stem cells (NTA-iPSCs) and validated with reference to the International Society of Cellular Therapy (ISCT) guidelines on MSC's criteria. **Results:** Our findings were able to show that its morphology, biological properties, and flow cytometry-based analysis resembled that of MSC as highlighted in the ISCT guideline. **Discussion:** Preliminary validation has shown several similarities between iMSCs and adult MSCs, making iMSCs a new potential platform for future studies in therapeutic interventions.

**P034 In vitro effect of umbilical cord-derived mesenchymal stem cells conditioned medium on the oxidative stress induced-cellular senescence of normal human dermal fibroblast**

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**Introduction:** Cellular aging is the progressive and irreversible loss of proliferative potential and functional capacity of cells. Mesenchymal stem cells (MSC) are multipotent cells that secrete bioactive factors in their medium which act as chemo-attractant for cell repair. In this study, we investigated the effects of conditioned medium from human umbilical cord-derived MSC (UC-MSC) on cellular senescence of normal human dermal fibroblasts (NHDF). **Materials and Methods:** NHDF was treated with 200µM hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) for 2 hours and allowed to recover for 5 days to develop the senescent model. Characterisation of senescent NHDF was done by identifying the expression of senescence and cell cycle genes and senescence-associated beta-galactosidase (SA-βgal) activity. Senescent NHDF was exposed to UC-MSC conditioned medium for 48 hours before the assessment of gene expression level, cell proliferation and telomerase level. **Results:** H<sub>2</sub>O<sub>2</sub>-treated NHDF showed increase in the p16, p21 and p53 expression and SA-βgal activity indicating the induction of senescence in the cell. Downregulation of CCND2 in H<sub>2</sub>O<sub>2</sub>-treated NHDF showed cell cycle arrest in the cells. Treatment with the conditioned medium of UC-MSC downregulated the expression of p16, p21 and p53 by 0.1670-fold, 0.5112-fold and 0.6545-fold respectively while CCND2

was upregulated by 1.4069-fold. However, no changes to the telomerase level or cell proliferation rate were detected in the treated senescent NHDF. Discussion: The bioactive factors secreted by UC-MSC reduced the expression level of senescent genes independent of telomerase activation. Further investigation is needed to elucidate the action of the bioactive factors in UC-MSC on senescent NHDF.

### **P035 Association between physical activity level and static balance among collegiate students**

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**Introduction:** Being actively involved in sports abets maintaining and promoting a healthy life. A sufficient level of physical activity involvement may bring about a positive change in postural balance. So, it is important to find out the association between physical activity level and static balance of the young adults using Balance Error Scoring System as the measurement tool. Balance Error Scoring System (BESS) is a quick, effective, valid, and reliable clinical battery to assess static balance. Materials & Methods: International Physical Activity Questionnaire (IPAQ) was distributed to the participants. Then, 72 participants were evaluated for their BESS score. The data collected were analysed and interpreted using SPSS software. Results: The results demonstrated that there is no association between the physical activity level and balance performance on BESS using chi-square test (chi-square with eight degrees of freedom = 9.007,  $p = 0.342$ ) and one-way between subjects ANOVA [ $F(2, 69) = 0.92$ ,  $p = 0.383$ ]. Discussions: This study does not substantiate any association between the physical activity level and balance performance. However, the results apparently showed that people who are more active would have a better static balance. This can be deduced by comparing the BESS scores of the three physical activity groups. HEPA active group has 6 out of 21 participants (28.6%) who achieved a superior or an above average BESS score. In comparison, the minimally active group has 8 out of 36 (22.2%) participants who achieved a superior or above average BESS score. Only one participant out of 15 (6.7%) in the inactive group obtained an above average BESS score.

### **P036 Risk perception towards COVID-19 among students in a private university in Klang Valley**

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**Introduction:** Malaysia had imposed various phases of movement restrictions to curb the spread of COVID-19. However, in the absence of an effective treatment, health preventive behaviours remain the utmost important strategies for guarding against the virus. Many reports have suggested that an individual's perceived disease risk is a key component in motivating health behaviour changes. This study therefore aimed to determine the self-perceived risks towards COVID-19, its associated factors and adoption of preventive measures among university students in a selected private university in Klang Valley during the third wave of COVID-19 in the country. Materials & Methods: A cross-sectional online survey was conducted between 1 December 2020 to 28 February 2021 through email invitation using convenience sampling. Logistic regression was conducted to determine the associations. Results: A total of 341 responses were received. The mean age of the respondents was  $21.6 \pm 2.1$  years and 58.45% were females. Over 90% of respondents had low self-perceived risks towards COVID-19. Predictors for higher self-perceived probability of getting infected were older age ( $p = 0.016$ ), presence of COVID-19 cases among social contacts ( $p = 0.043$ ) and staying with others ( $p = 0.026$ ), while higher knowledge score on COVID-19 was predictive of higher self-perceived susceptibility ( $p = 0.004$ ). A majority had exercised the standard preventive measures. Discussion: We did not find any association between risk perceptions and the adoption of preventive behaviours at the time of data collection. This could be due to the dynamic nature of risk perceptions and health behaviours that could be missed in a cross-sectional study design.

### **P037 EGCG mediates its antihypertensive effects via upregulation of angiotensin type II receptor in a primary hypertension rodent model**

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**Introduction:** The renin-angiotensin-aldosterone system (RAAS) plays a central role in controlling the blood pressure. The modulation of RAAS components using drugs has been widely accepted as an effective strategy in treating hypertension. The efficacy of epigallocatechin-3-gallate (EGCG) as an effective RAAS regulator has been extensively demonstrated in several *in silico* and *in vitro* studies. Nevertheless, evidence from the *in vivo* hypertensive model has not been well established. This study aims to investigate the effects of EGCG on blood pressure development and its effect in modulation of gene expression of the key components of the RAAS, which included angiotensin type I and II ( $AT_1$ ,  $AT_2$ ) receptors and angiotensinogen in a primary hypertension rodent model. Materials & Methods: EGCG (250 mg/kg *b.w.*, *i.g.*) were given once daily to spontaneously hypertensive rats (SHRs) for 28 days. Systolic blood pressure (SBP) was measured using the non-invasive volume-pressure recording tail-cuff blood pressure measurements throughout the experimental period. At day 29, the renal cortex was harvested for mRNA quantification study. Results: The SBP of the EGCG-treated group were significantly lower compared to the control. The mRNA levels of  $AT_2$  receptor in EGCG treated group was significantly higher compared to the control. There were no changes in the expression levels of the  $AT_1$  receptor and angiotensinogen. Pearson correlation test showed that SBP reduction was significantly associated with the upregulated  $AT_2$  receptor mRNA levels. Discussion: This study proposes that EGCG upregulates the  $AT_2$  receptor levels which may lead to vasodilation thus contributing to the observed antihypertensive effects in SHRs.

**P038 Immunoprofiling and morphological observation of the monocytic lineages derived from AML-M5-specific iPSC using the modified in vitro EB-based haematopoietic differentiation protocol**

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Introduction: Pathogenesis of acute monocytic leukaemia (AML-M5) remains largely unknown and disease-specific induced pluripotent stem cells (iPSC) can be a useful platform for disease modelling. Differentiation of disease-specific iPSC to the respective mature forms may allow better understanding of the stepwise progression of disease. An iPSC clone harbouring the MLL genetic abnormalities was previously generated by our group from AML-M5-specific cells, THP-1. Materials & Methods: In this study, we aim to differentiate the AML-M5-specific iPSC (AML-M5 iPSC) into monocytic lineage cells using the modified Embryoid Bodies-based haematopoietic *in vitro* differentiation protocol. Results: Upon differentiation, the stem cell and HSC markers - CD34, CD49f and CD38 were significantly decreased and the monocytic markers - CD4, CD14 and CD68 were significantly increased suggesting that the hESC and AML-M5 iPSC were losing the stemness while differentiating towards the monocytic lineages. In contrast with human ESC, the AML-M5 iPSC would differentiate at a faster rate during early phase of differentiation and undergo severe cell apoptosis during the late maturation stages. Differentiation of AML-M5 iPSC produced mainly the promonocytes and a scarce number of mature monocytic cells (e.g. monocyte or macrophage). Discussion: This protocol allows the differentiation of the AML-M5 iPSC and hESC into late monocytic lineage but AML-M5 iPSC was found to be less responsive. The reprogrammed AML-M5 iPSC with the MLL-AF9 genetic could inherit a similar differentiation blockade as THP-1 blasts. The differentiation of AML-M5 iPSC seems to mimic the formation of AML leukemic blasts may provide us a with a unique platform to explore the pathogenesis of AML-M5.

**P039 Hypotensive and angiotensin-converting enzyme inhibitory activities of a partially purified fraction of *Gynura procumbens* in spontaneously hypertensive rats**

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Introduction: *Gynura procumbens* (*G. procumbens*) is anecdotally utilised for the treatment of hypertension. Scientifically, inhibition of the angiotensin-converting enzyme (ACE) serves as a crucial mechanism in decreasing the blood pressure (BP) of an individual. In this study therefore, the hypotensive effect and ACE inhibitory activity of a partially purified fraction (FA-I) of the *G. procumbens* leaf extract were investigated. Materials & Methods: Seventeen-week-old spontaneously hypertensive (SHRs) and normotensive Wistar-Kyoto (WKY) rats (n=6 in each group) were given intravenous bolus administrations of 0, 0.625, 1.25, 2.5, 5 and 10 mg/kg of FA-I. The BP of the rats was measured via a direct and invasive technique, recorded onto a PowerLab data acquisition system and analysed with a LabChart 6 software. The ACE inhibitory activity of FA-I (0, 0.25, 0.5, 1 and 2 mg/ml) was studied by using an *in vitro* ACE colourimetric assay of Hurst and Lovell-Smith, 1981 with some modifications. Results: The hypotensive effect of FA-I was observed in both the SHR and WKY rats in a dose-dependent manner. However, FA-I significantly ( $p < 0.05$ ) attenuated the mean arterial pressure (MAP) in the SHRs more than that in the WKY rats, notably at the higher dose of 10 mg/kg ( $p < 0.01$ ). In the *in vitro* assay, FA-I inhibited ACE activity in a concentration-dependent manner with an IC<sub>50</sub> value of 0.52 mg/ml. Discussion: The finding that FA-I was able to inhibit ACE activity *in vitro* strongly suggests the hypotensive effect observed in the rats with the FA-I administrations could be partly due to this property of *G. procumbens*.

**P040 Prevalence of work-related musculoskeletal diseases in the secondary sector across the globe – A review**

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Introduction: The secondary sector, which consists of manufacturing and construction industries, is the backbone of a country's economy. Therefore, awareness must be paid to the development of work-related musculoskeletal disorders (WMSDs) among workers in this sector as it substantially impacts work absenteeism and job turnover. Hence, this systematic review aimed to investigate the prevalence of WMSDs in different industries within the secondary sector on a global scale. Materials & Methods: An extensive search of PubMed Central, PubMed, SAGE, ScienceDirect, and Scopus databases. The articles were screened according to Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Inclusion criteria were publications in the English language, from 2016 to 2021, on global work-related MSDs. Congenital diseases, autoimmune diseases, ageing-associated diseases, conference articles, review literatures, interventional literatures, and clinical trial literatures were excluded from this review. Results: A total of 198 articles were obtained from databases. Sixteen papers were evaluated in-depth. This review suggests the overall prevalence of WMSDs ranges between 20.0% and 92.1%. It appears that the manufacturing industry had the highest prevalence of 92%. The common anatomical sites affected were the upper/lower back (11.2-71.1%), neck (4.66-57.9%), and shoulders (11.4-65.5%). The least common body parts affected by WMSDs were the elbow, hips/thighs, and hands. Discussion: WMSDs still carry a significant burden on public health, especially among secondary industry workers. Thus, the associated risk factors need to be addressed so that intervention can be made to reduce the long-term complications experienced within the working population.

**P041 Characterisation of monocytic cells derived from acute monocytic leukaemia-M5-induced pluripotent stem cells**Kit Li Kim<sup>1</sup>, Pooi Pooi Leong<sup>1</sup>, Soon Keng Cheong<sup>2</sup>, Amy Yi Hsan Saik<sup>1</sup>*Departments of <sup>1</sup>Pre-clinical Science & <sup>2</sup>Medicine, Faculty of Medicine and Health Sciences, Universiti Tunku Abdul Rahman, Selangor, Malaysia*

**Introduction:** Acute monocytic leukaemia (AML-M5) affects mostly young children. It has a poor prognosis, and the mechanism leading to treatment failure remains unclear. Advancement in the study of AML-M5 has been profoundly hindered by the lack of a proper disease model *in vitro*. The recent discovery of AML-M5-specific-induced pluripotent stem cells (AML-M5-iPSCs) appears to be the game-changer. They can faithfully capture the patient's genome while having unlimited differentiation potential. **Materials & Methods:** In this study, AML-M5-iPSCs were induced with growth supplements to enter haematopoietic differentiation, generating embryoid bodies followed by monocytic cells. The morphology and size of differentiated monocytic cells were characterised microscopically across 5-, 10-, 15-, 20- and 25-day post-differentiations and compared with that of the parental cells THP-1. **Results:** It was observed that differentiated monocytic cells consistently exhibited a large, round, single-cell morphology with irregular nucleus shape and primary granules similar to THP-1 cells. The diameter of both cell types was within the range of 12-20 $\mu$ M, corresponding well to monocytes. Subsequently, the phagocytotic activities of both cell types were quantified at a similar differentiation period. Carboxylate-modified red fluorescent latex beads were added at the ratio of 1:400 into the culture medium for 2 hours, followed by fluorescent quantification. Statistical analysis revealed that there was no significant difference ( $p>0.05$ ) between the phagocytotic rate of both monocytic and THP-1 cells from day 5 until 25. **Discussion:** Our data suggest that monocytic cells derived from AML-M5-iPSCs between 5-25 days were compatible THP-1 morphologically and functionally; thus, they could serve as a disease model for AML-M5.

**P042 Level of trust and usage of social media information among staff and students of Universiti Tunku Abdul Rahman, Sungai Long Campus during COVID-19 pandemic: A cross sectional study**

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**Introduction:** Covid-19 pandemic is an ongoing public health crisis caused by coronavirus (SARS-CoV2). In Malaysia, Movement Control Order (MCO) was implemented since March 2020 and resulted in reducing physical interactions between individuals. Social media has emerged as a powerful medium for information delivery and communication. Here, we aim to investigate the level of trust and usage of social media information among staff and students of UTAR Sungai Long campus between October 2020 – December 2020. **Materials & Methods:** A questionnaire adopted from WHO Survey Tool and Guidance for COVID-19 was used. A total of 434 participants consisting of 93 (21.4%) academic and administrative staff and 341 (78.6%) students were recruited. **Results:** As compared with students, staff were shown to obtain COVID-19 information through conversation with colleagues ( $\chi^2=4.681$ ,  $p=0.031$ ), consultation with health workers ( $\chi^2=6.985$ ,  $p=0.008$ ) and opinion polls ( $\chi^2=4.870$ ,  $p=0.027$ ). Comparing with those without postgraduate degree, participants with completed postgraduate degree showed trust in the information released on websites or online news pages ( $\chi^2=6.614$ ,  $p=0.010$ ) and they often referred to public television stations ( $\chi^2=5.827$ ,  $p=0.016$ ) and medical institutions press releases ( $\chi^2=5.848$ ,  $p=0.016$ ) for updates. Compared with those who stay with family and friends, participants who live alone often obtained COVID-19 information by referring to the daily newspaper ( $\chi^2=6.438$ ,  $p=0.011$ ) and conversation with colleagues ( $\chi^2=4.622$ ,  $p=0.032$ ). **Discussion:** No significant associations were found between trust and usage of social media with gender and marital status.

**P043 Ready-to-eat (RTE) vegetables: is it safer than consuming meat?**

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**Introduction:** The presence of foodborne pathogens, such as *Listeria monocytogenes* and *Salmonella* spp. in ready-to-eat (RTE) vegetables and uncooked foods of animal origin has been associated with causing foodborne disease outbreaks worldwide. **Materials & Methods:** In this study, we identified and compared the prevalence of *L. monocytogenes* in 25 cucumbers and 25 parsleys, and *Salmonella* spp. in 50 chicken meats, which were obtained from retail markets located in Kampar Perak. The collected samples were enriched, homogenized, and purified on respective selective broths and agar plates. DNA extraction of the isolated bacteria was performed using the boiled-cell method prior to multiplex polymerase chain reactions (m-PCRs) for verification. **Results:** Only 4% ( $n=1$ ) of the cucumber and 28% ( $n=7$ ) of the parsleys collected were detected with *Listeria* species; however, no *L. monocytogenes* were detected in any RTE vegetables. On the contrary, *Salmonella* spp. was detected in 76% ( $n=38$ ) of the chicken meats, which 14% ( $n=7$ ) of the samples were identified to be *Salmonella* Enteritidis. **Discussion:** From the findings, we could deduce that the chicken meats collected from the retail markets have a higher risk of contracting foodborne pathogens as compared to RTE vegetables. This could be due to low and non-strict hygiene practices by food handlers in handling the poultry meat along the supply chains. They might lack food safety knowledge and awareness. Hence, regular surveillance and strict assessment should be conducted by the local authorities to ensure the safety of food consumption for residents in Perak.

**P044 Validity of the Kleihauer test within 24 hours in Hospital Tengku Ampuan Rahimah**

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Introduction: Kleihauer test (KT) was developed for the detection of fetal red cells in the maternal circulation following transplacental haemorrhage. This test depends on the haemoglobin F in fetal cells resisting acid elution to a greater extent than the haemoglobin A in the maternal cells. In HTAR, it is often requested by clinicians to establish the presence of fetomaternal haemorrhage (FMH) in an anaemic neonate or to determine the occurrence of isoimmunization in Rhesus D negative mothers. However, in the case of fetal anaemia, it does not play a major role in treatment choices. Therefore, it is not necessary for KT to be done urgently. The aim is to evaluate the validity of KT if it was not done immediately. Materials & Methods: This study was conducted from February to November 2019; a total of 16 samples were received. KT was performed according to modified Shepard's method. All positive (>4mls) KT were repeated at 24 hours of sample collection and compared with the immediately processed slide. The whole blood sample in the EDTA tube was kept at room temperature, and two observers assessed the quality of the slides. Samples of mothers with alloantibodies and with known hemoglobinopathy were not included in this study. Results: A total of 5 KT that was positive on the immediate process was repeated at 24 hours, and it turned out to be positive too. The quality of the stain was also maintained between KT processed immediately and at 24 hours. Discussion: There was no significant reduction in the fetal RBCs noted when comparison was made between KT done immediately and at 24 hours of sample collection. Sample collected for Kleihauer Test to establish FMH in an anaemic neonate can be processed within 24 hours for reporting.

**P045 Pregnancy and Corona virus disease 2019**

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Introduction: This poster presentation aims to provide an insight and knowledge on the Coronavirus disease 2019 (Covid -19) and vaccination with a focus on its implication on pregnancy and breastfeeding. Materials & Methods: The poster includes classification of the disease's severity, incubation period, clinical presentation, special care of infected pregnant women, hospital admission criteria, mode of delivery, breastfeeding and vaccination. Results: We found that the incubation period and the severity of the disease are similar in non-pregnant patients despite the altered immune system. In addition, Covid-19 increases the risk of venous thromboembolism (VTE) in pregnancy with potential vertical transmission of the infection to the fetus. However, there is no preferred mode of delivery as it is still based on obstetrics indications. Infected mothers can breastfeed their babies safely. Finally, mRNA vaccines are safe and can protect the foetus as well. Discussion: We concluded that the disease in a pregnant patient has a comparable course to non-pregnant. VTE prophylaxis is essential for all admitted infected pregnant women. Moreover, mRNA vaccines are safe, effective even before 20 weeks of gestation and strongly recommended to all pregnant and breastfeeding women.

**P046 The role of physiotherapy in combating Covid-19**

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Introduction: Physiotherapy is beneficial in the respiratory treatment and physical rehabilitation of patients with COVID-19. It improves respiratory functions and quality of life during the early intervention and post-discharge phase. Chest physiotherapy, endurance exercises and mobility training have been the mainstay of physiotherapy management of patients with COVID-19. To elucidate the potential role physiotherapy plays in the treatment of COVID-19 patients during the inpatient, outpatient and post-discharge phase. Materials & Methods: Management includes chest physiotherapy such as airway clearance, positioning, suctioning and inspiratory muscle training to improve lung function. Physiotherapists help patients to achieve early ambulation and mobilisation. Following discharge, rehabilitation involves respiratory muscle training, cough exercise, diaphragmatic training, stretching exercise, and a home exercise program. Results: Most studies conducted worldwide support physiotherapy as a crucial part of the COVID 19 rehabilitation team. Physiotherapy may be beneficial in the respiratory treatment and physical rehabilitation of COVID-19 and Post Covid patients. Discussion: COVID-19 patients can benefit from physiotherapy, minimise secondary complications, and help them return to normal life as soon as possible. Carefully supervised chest physiotherapy techniques, adhering to protective gear guidelines, and early mobilisation play a key role in the management.

**P047 Prevalence and potential risk factors of neck and shoulder pain among academics staff in universities all across Selangor during movement control order (MCO): a questionnaire based study**

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Introduction: Extensive research has been done to investigate neck and shoulder pain, which poses an increasing threat among academic staff. Different potential risk factors can lead to neck and shoulder pain among academic staff. The objective of this study is to investigate the prevalence and potential risk factors of neck and shoulder pain among university academic staff across Selangor during MCO. Materials & Methods: A cross-sectional study design and purposive sampling method were used, and a total of 141 participants from 5 universities participated in this research. Modified Nordic and Dutch musculoskeletal

questionnaires were employed to collect the associated data. Results: The results demonstrate that neck and shoulder pain prevalence among academic staff was 57.9% and 53.7%, respectively. Significant associations were found between neck pain and gender, education level, the job that requires high skills, working overtime, too much work, working in an awkward position, working in the same posture for a prolonged period of time, and working in the head-down and overhead posture. While gender, BMI, significant pressure and anxiety added to life due to job, working in awkward positions, working for prolonged periods of time in the same posture, working with head down, and overhead posture were significantly associated with shoulder pain. Discussion: The prevalence of neck and shoulder pain among academic staff in universities all across Selangor during MCO was high and serious attention should be provided to the different potential risk factors that lead to neck and shoulder pain.

**P048 The study of quality of life among medical students in Universiti Tunku Abdul Rahman during COVID-19 pandemic**

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Introduction: Maintaining a good quality of life is an important component when studying medicine. However, the COVID-19 pandemic has brought a negative impact on the quality of life among medical students. Thus, studies need to be done to assess their quality of life, to generate effective measurements to overcome this issue. Materials & Methods: A cross-sectional study was conducted among medical students in Universiti Tunku Abdul Rahman using the WHOQOL-BREF instrument. Results: A total of 151 students participated in this study, with (63.6%) females and (36.4%) males of mean age between 21-25 years. Among all respondents, 23.2% were year 1 students, 25.2% year 2, 5.9% year 3, 17.2% year 4 and 18.5% year 5 students. The environmental domain has the highest mean scores (74.95) among all domains of quality and life. In general, Year 2 students living at house or apartment, students living with families, students of M40 household income, students without presence of congenital disease showed a higher score of quality of life in the environmental domain. Discussion: The overall quality of life of medical students in UTAR was good, indicating that they were not affected much by the pandemic. However, it is still advised to continue monitoring and supporting students during the pandemic, to further improve their quality of life.

**P049 Very rare primary small intestinal malignancy attributable to isolated extramedullary plasmacytoma of the ileum: A case report**

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Introduction: Extramedullary plasmacytoma (EMP) of the small intestine is an unusual plasma cell neoplasm in this anatomic region and a rare cause of intestinal malignancies. The objective of this clinical case report is to highlight this unusual cause of intestinal malignancies to avoid false diagnoses and the need to rule out associated conditions. Case report: We herein report a case of a 53-year-old male without any comorbidity and family history of malignancies demonstrating gastric outlet obstruction symptoms associated with significant weight loss within a month. Due to the epigastric mass, subsequent imaging investigations (abdominal and endoluminal ultrasonography and abdominal CT) were performed. However, the results had a shared contradiction. Thus, primary segmental resection and anastomosis of the ileum were performed. Results: Intraoperative findings revealed an ileal tumour, gross dilatation of stomach and duodenum, liver metastasis and lymph nodes enlargement. The post-surgical pathologic report was consistent with anaplastic plasmacytoma. Post-surgery, the patient was referred to a haematologist to rule out multiple myeloma, and given its absence, a final diagnosis of primary extramedullary plasmacytoma of ileum was made. Discussion: Generally, primary EMP has a good prognosis, but occasionally it may progress into multiple myeloma or relapse. Therefore, patients should have a haematologist referral and long term follow up after treatment.

**P050 Cytokine-induced killer (CIK) cells generated from critically-ill cancer patients induce tumour cell death**

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Introduction: Cytokine-induced killer (CIK) cells have emerged as a potential cellular immunotherapy for the adjuvant treatment of various malignant cancers. They are a group of immune cells that comprise T cells, natural killer cells, and natural killer T (NKT) cells. The CD3<sup>+</sup>CD56<sup>+</sup>NKT cells target cancer cells directly or indirectly, without interaction with T-cell receptor or antigen presentation by MHC molecules, allowing a rapid and non-restricted immune response. Materials & Methods: Peripheral blood was withdrawn from 4 cancer patients (mean age of 74±11 years) and a healthy donor (45-year-old) using simple venipuncture. The samples were isolated and induced using interferon-gamma, OKT3 and interleukin-2. Then, cytotoxicity of CIK cells was assessed against MDA-MB-231, H1975 and HCT15 target cells at various effectors/target (E/T) ratios using MTT assay. Results: The median expansion number ( $10.35 \pm 2.52 \times 10^9$  vs  $8.3 \times 10^8$  cells) and the median proportion of NKT cells ( $20.66\% \pm 7.38\%$  vs  $19.61\%$ ) in cancer patients were comparable to the healthy donor. In all samples, CIK cells demonstrated significant cytotoxic killing activity against the cancer cells in a dose-dependent manner. At the highest E/T ratio of 40:1, CIK cells showed > 90% of cytotoxicity effect. Discussion: We have successfully isolated and expanded the CIK cells from cancer patients and healthy donor using only 80 mL of peripheral blood. Together, CIK cells demonstrated antitumour activity across all the cancer cell lines tested. Further understanding of the killing mechanisms, coupled with knowledge of CIK functions in cancer cells is important for future development of cellular immunotherapy.

**P051 Comparison of performance between 3D-printed and traditional flocked swabs**

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**Introduction:** The onset of the COVID-19 pandemic posed a massive challenge for the production of key materials needed for outbreak control. In response, numerous entities employed 3D printing to complement existing production methods to ensure continuity of supply. **Materials & Methods:** The performance of a 3D-printed swab manufactured by a local manufacturer and a traditional flocked nasopharyngeal swab was assessed in this study. The release efficiency of a sample was determined by submerging the tips of the swabs in 0.1% crystal violet, followed by submersion in distilled water for dye release. The optical density of the resulting eluate was determined at the wavelength of 595 nm. Recovery of bacterial or fungal samples was tested by repeating the release efficiency protocol, replacing the 0.1% crystal violet solution with a suspension of *Streptococcus pneumoniae* ATCC6303 or *Candida albicans* ATCC10231 at different loads, followed by detection using the colony-forming unit (CFU) plating and broth culture methods. **Results:** The 3D-printed swab outperformed the traditional flocked nasopharyngeal swab in terms of release efficiency. The former performed equally as good as the latter in the detection of the test bacterium and fungus. **Discussion:** The results of this study suggest that the 3D-printed swab is likely a suitable replacement for the traditional flocked swab, at least for bacterial/fungal detection. The manufacture of 3D-printed swabs requires little training and can be done on-site when supply chains are challenged, thus providing a viable alternative to traditional means of sample collection. Further assessments will be needed to determine their suitability for viral detection.

**P052 The association between perception level of information from social media and behavioural responses and anxiety level among university students in Klang valley during covid-19 outbreak**

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**Introduction:** A cross-sectional study was conducted to determine the association between the perception of the information from selected social media platforms and behavioural responses and anxiety levels among university students in Klang Valley during the COVID-19 outbreak. **Materials & Methods:** Stratified random sampling followed by proportionate and convenient sampling was used during data collection. A questionnaire adopted from Al-Dmour et al. (2020), Carver (1997) and Zhong et al. (2020) was used. The questionnaires were disseminated using Google Form via social media, Student Representative Council pages, and official confession pages. The data was then analysed by using SPSS version 22.0. **Results:** A total of 1272 participants were recruited, and the response rate was reported at 98.6%. University students were reported to have an overall high-level perception (mean score= 3.70/5+0.68) in perceiving information regarding COVID-19 from selected social media platforms. University students who are female, Malay ethnic, studying in public universities, undergraduates or studying in social science and art were significantly associated with the high-level perception of information from social media and showed adaptive coping behaviours during the pandemic. No significant association was found between anxiety level and perception of information from social media. **Discussion:** In conclusion, gender, ethnicity, type of university, study level and study field were associated with the perception of information from social media, which may lead to adaptive coping behaviours. The outcomes of this study may help the authorities to strategise ways to disseminate critical information better and promote positive behaviour responses via social media platforms.

**P053 Eating healthy: Sikh elders and youth diet preferences**

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**Introduction:** The Sikh diet is frequently associated with the food served in the gurdwara, which is vegetarian. Nonetheless, Punjabi cuisine is not only confined to the vegetarian meal but is diverse in terms of recipes and spices. Above all, the Punjabi community cannot escape the variety of traditional delicacies. Thus, this study aims to discover how social and cultural factors impact food selection among Sikh seniors and Sikh youths. This study also investigates how their dietary preferences influence their health, particularly those suffering from chronic illnesses. **Materials & Methods:** To investigate the eating habits of Sikh adolescents and older adults, a mixed-method approach was utilised, and close-ended questionnaires were provided. Eight volunteers who volunteered to share their experiences concerning diet and disease were interviewed. Thematic techniques were used to examine the study's findings. **Results:** Sikh elders favour authentic Punjabi food with no modifications, and most prefer a vegetarian diet. In contrast, Sikh youngsters are more exposed to a range of cuisines and different ethnic cooking techniques in their everyday diet, including dishes from other nations. Surprisingly, regardless of diet preferences, the majority of health problems are due to the lack of health awareness and dietary calories. **Discussion:** The findings of this study are essential for raising awareness, particularly among the Sikh population, who are less likely to take the initiative to modify their eating habits, which can have a negative impact on their health.

**P054 Efficacy of potassium permanganate and sodium hypochlorite on the removal of foodborne pathogens *Listeria monocytogenes* and *Escherichia coli* O157:H7 from vegetables**

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**Introduction:** *Listeria monocytogenes* and *Escherichia coli* O157:H7 can cause potentially severe foodborne illnesses. In food preparation, adequate washing is essential to remove potential pathogens from uncooked, ready-to-eat vegetables. Potassium permanganate is an oxidizing agent widely used as an alternative to chlorine-based disinfectants. Still, its efficacy in removing *L. monocytogenes* and *E. coli* O157:H7 from vegetables has not been reported. **Materials & Methods:** To compare the disinfection efficiency of potassium permanganate and sodium hypochlorite, lettuce samples were submerged in suspensions of *L. monocytogenes*, and *E. coli* O157:H7 reference strains and then dipped either in sterile tap water or two different concentrations each of sodium hypochlorite and potassium permanganate. The treated lettuce samples were then 3D- swirled in normal saline to release bacteria into the saline. The bacterial suspensions in saline were centrifuged, and the pellets obtained were used to obtain colony counts (CFU/ml). **Results:** The samples washed with just tap water yielded the highest colony counts for both bacteria. *L. monocytogenes* was not grown from any of the samples treated with potassium permanganate or sodium hypochlorite. With *E. coli* O157:H7, 50ppm of potassium permanganate and sodium hypochlorite caused a 2.5-log and 1.5-log reduction in colony count, respectively, compared to tap water. At 100ppm, however, both disinfectants achieved complete growth inhibition. **Discussion:** *E. coli* O157:H7 (gram-negative) was apparently more resistant to disinfectant treatment than *L. monocytogenes* (gram-positive). Potassium permanganate, a stronger oxidizing agent, appeared to be slightly more effective than sodium hypochlorite for the disinfection of vegetables contaminated by *E. coli* O157:H7.

**P055 The effectiveness and satisfaction of hybrid teaching among Year 3 medical students in UTAR: the comparison between 2 batches**

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**Introduction:** The adoption of online or hybrid teaching in education has increased exponentially since the emergence of the COVID-19 pandemic. The purpose of this research was to assess medical students' perspectives regarding their satisfaction towards hybrid teaching and determine the effectiveness of hybrid teaching in medical education. **Materials & Methods:** This research focused on two batches of clinical year medical students, which differed in teaching methods delivered. A total of 93 year-3 medical students from Universiti Tunku Abdul Rahman were enrolled in the study; 49 from the senior batch who underwent physical learning, and 44 from the junior batch who underwent hybrid learning. The academic performances of the students, which were assessed via their end-of-posting marks, were analysed to compare the effectiveness of the two teaching methods. In addition, a set of validated self-administered questionnaires was also used to assess the perceived effectiveness and satisfaction of the students towards their respective learning modes. **Results:** Overall, there was no significant difference in the academic performances among the two batches of students. The students from the senior batch who underwent physical learning have higher mean scores in perceived effectiveness and satisfaction as compared to the junior batch who underwent hybrid learning. **Discussion:** The results of this research show that although the students prefer the physical mode of learning, there is potential for implementing hybrid teaching among medical students. Nonetheless, there is still room for improvement to improve the students' perception of hybrid learning.