



PROGRAMME & ABSTRACT BOOK

INTERNATIONAL CONFERENCE ON POST- COVID HEALTHCARE, MEDICAL RESEARCH & EDUCATION

29 - 31 March 2022

Journal of Clinical and Health Sciences (JCHS)
&
The Faculty of Medicine, Universiti Teknologi MARA

INTERNATIONAL CONFERENCE ON POST-COVID HEALTHCARE, MEDICAL RESEARCH AND EDUCATION 2022

Journal of Clinical and Health Science (JCHS)

Abstract eBook: International Conference on Post-COVID Healthcare, Medical Research and Education 2022

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Foreword

The Journal of Clinical and Health Sciences (JCHS), the Official Journal of the Faculty of Medicine, Universiti Teknologi MARA, Malaysia, is proud to host its first international conference on Post-Covid Healthcare, Medical Research and Education (ICPHMRE). JCHS is a free open-access peer-reviewed journal that had its first issue published in 2016. It is currently indexed in Mycite, Google Scholar, MYJMS, CABI, Crossref, Copernicus, Publons and UiTM Respository. JCHS is published twice a year and welcomes submissions for publication in all areas of clinical and health sciences.

The ICPHMRE is being held virtually from March 29 - 31, 2022, with a gathering of numerous eminent speakers and more than 200 delegates, both local and abroad, to talk and present their experiences and views on the kind of impact the COVID-19 pandemic has had on healthcare, research and education over the last two years. These will be in the form of plenary lectures, symposia and panel discussions on issues in healthcare, research and medical education. Through these the conference hopes to provide an avenue for discourses on the future directions in healthcare, education and research following this pandemic. The changes and adaptations that have been imposed on healthcare, research and education by the pandemic, particularly in the use of digital technology, are most likely here to stay. It is hoped that this conference will provide new ideas on how these adaptations can be consolidated and further improved. This three-day conference also provides opportunities for academicians, physicians, general practitioners and scientists to share and exchange evidence-based practices, as well as to create networking, collaborations, and scientific endeavours. JCHS welcomes all participants to this conference and wishes happy conferencing. Hope you have an enriching experience.

ORGANIZERS

Journal of Clinical and Health Science (JCHS)
Faculty of Medicine, Universiti Teknologi MARA (UiTM)

MESSAGE FROM THE MINISTER OF HEALTH, MALAYSIA



Yang Berhormat Tuan Khairy Jamaluddin

Minister of Health, Ministry of Health of Malaysia

Assalamualaikum and warm greetings everyone,

Welcome to all the participants of the First International Conference on Post-COVID Healthcare, Medical Research and Education 2022, organised by the Journal of Clinical and Health Sciences, Faculty of Medicine, Universiti Teknologi MARA (UiTM). I believe this conference will provide the opportunity for a robust scientific discourse on the impacts of COVID-19, on not only healthcare but also on research and medical education in the country.

Congratulations to the committee for all your hard work in organising the conference, which has an impressive line of both national and international esteemed speakers. I believe that the conference would shed more light on the various aspects of this pandemic that has affected the whole world. I hope that the information disseminated here would be able to answer some of the issues surrounding not only the COVID-19 virus but also its vaccines. As the *Program Imunisasi Covid Kebangsaan* (PICK) program is rolled out further, now including our young children, I do hope that we will be able to achieve a higher vaccination rate in the hope to reduce the severity of the complications. While we strive towards some degree of pre-COVID-19 times, we hope that all Malaysians would remain cautious and continue to practice self-restraint to reduce the burden of government hospitals and healthcare services.

I am certain that everyone would gain an invaluable amount of knowledge and understanding on the issues surrounding COVID-19 through this conference. I hope that this meeting will have further impacts on generation of new ideas, establishments of collaborations and future developments. When we were forced into isolation, we appreciated the value of interactions and communications, albeit, on an online platform. Therefore, I sincerely wish the conference a huge success and many other great endeavours to follow.

Thank you.

YANG BERHORMAT TUAN KHAIRY JAMALUDDIN

Minister of Health

Ministry of Health of Malaysia.

MESSAGE FROM THE VICE CHANCELLOR, UiTM



YBhg Professor Datuk Ts Dr Hajah Roziah Mohd Janor

Vice-Chancellor
Universiti Teknologi MARA (UiTM)

Assalamualaikum Warahmatullahi Wabarakatuh,

Greetings from Universiti Teknologi MARA (UiTM).

I would like to express my gratitude to all the esteemed speakers and all the online delegates for your participation. I would like to congratulate the organizing committee of the International Conference on Post-Covid Healthcare, Research & Medical Education 2022, comprising of academicians and experts in the field, who have made this conference a reality, albeit on an online platform. The conference would provide a good platform for robust, evidence-based, scientifically driven discussions on the impact of the COVID-19 pandemic on the various areas in healthcare, medical research, and education and how we are going to be moving forward.

The Faculty of Medicine, UiTM has been playing a prominent role in the ongoing battle against COVID-19, in terms of providing healthcare services via the new Hospital UiTM, as well as contributing to the ongoing research of the virus. As a matter of fact, the Institute of Medical Molecular Biology (IMMB) in Faculty of Medicine was amongst the first to establish a COVID-19 Polymerase-chain Reaction (PCR) laboratory in the country to help in the diagnosis of COVID-19 infection. Additionally, almost all the clinicians and a substantial number of non-clinicians from the Faculty of Medicine volunteered to run the Vaccine Dispensing Centre (PPV) in Puncak Alam; actively promoting the need for vaccination and managing queries and doubts of the public on vaccination. A significant number of scientific papers surrounding the topic of COVID-19 has also been produced by our diligent lecturers. And we are very proud of the resilience and grit demonstrated by our medical staff and students who had to endure all the challenges and limitations due to the pandemic.

Therefore, it is timely that this conference acts as a reset button for all the experts to convene and share their experiences and knowledge to recover and restore the drive in adapting to the new norm, affecting all aspects of our personal, professional, and social lives.

As the first female Vice Chancellor (VC) of UiTM, I am honoured to have the participations of many lady scientists in this conference, alongside male colleagues. It is also my aspiration to empower more female medical scientists to push the boundaries of medical research.

I hope that this JCHS Conference would be among the first of many more COVID-19 related conferences in UiTM and in Malaysia. I believe that this conference will put UiTM in the international scene in the COVID-19 era. It is my hope by engaging in more meaningful lively discourses and debates, UiTM would be more recognized and acknowledged globally, thus bringing us closer to be a Globally Renowned University (GRU).

May you have plenty of fruitful discussions and insightful sharing throughout the conference.

Thank you.

PROFESSOR DATUK TS DR HAJAH ROZIAH MOHD JANOR

Vice Chancellor

Universiti Teknologi MARA.

MESSAGE FROM THE DEAN, FACULTY OF MEDICINE UITM



Associate Professor Dr Fazah Akhtar Hanapiah

Dean, Faculty of Medicine, Universiti Teknologi MARA.

Assalamualaikum wbt. and Good Day.

Welcome to all the speakers and participants to this inaugural International Conference on Post-COVID Healthcare, Medical Research and Education 2022 organised by the Journal of Clinical and Health Sciences (JCHS) and the Faculty of Medicine, UiTM Sungai Buloh Campus.

Congratulations to the organising team led by Professor Dr Rohana Abdul Ghani for curating an amazing line-up of speakers for the conference. They are truly the experts in their field and I have no doubt that the conference will shed a lot more light on the impact of the COVID-19 pandemic on the healthcare system, medical research and medical education around the world.

The Faculty of Medicine, UiTM itself has been at the forefront in Malaysia's battle against COVID-19. The themes for each day of the conference correlated well with the faculty adapting to the pandemic-induced changes; be it in the health service that we provide, the medical research that we are involved in, and how we cater to the medical education needs of our students.

From the programme, I am certain that the participants will gain invaluable knowledge surrounding COVID-19 related issues via the conference and will generate new ideas and collaborations between participants.

I hereby wish the conference a great success and to many more great undertakings by JCHS and the Faculty in the future.

Thank you.

ASSOCIATE PROFESSOR DR FAZAH AKHTAR HANAPIAH

Dean, Faculty of Medicine
Universiti Teknologi MARA.

MESSAGE FROM THE CHAIRPERSON



Professor Dr Rohana Abdul Ghani

Deputy Dean, Postgraduate & Professional Training, Faculty of
Medicine, Universiti Teknologi MARA

Dear Friends and Colleagues,

On behalf of the organising committee of the 1st International Conference on Post-COVID Healthcare, Medical Research and Education 2022, I would like to welcome all of you who are joining us in this event. Two years have passed since the early days of the pandemic, and we have remained strong, adapted and relevant. Therefore, we are indeed honoured to be given this opportunity to host this meeting and to provide a platform where ideas are shared, thoughts are presented and where opinions matter. Special thanks to the speakers for your kindness in sharing with us your knowledge, expertise and experience in the field. We look forward to the interesting topics on the impact of the COVID-19 virus on healthcare services, research and medical education. I believe that the conference would be able to achieve its objectives and benefit all of us.

I would like to express my utmost gratitude to all the members of the organising committee in putting together a comprehensive and interesting program. I would also like to thank the delegates who had eloquently shared their work and submitted their abstracts. We hope that you will enjoy the evaluation process, and an advance congratulations to all the winners. To the non-winners, your work is just as important and we wish you all the best for your future endeavours. Thank you to our partners in the pharmaceutical, biomedical and life sciences industry for your support, and we look forward to future partnerships.

Finally, a warm welcome to all of you and we hope you will have an enjoyable and fruitful meeting.

Thank you.

Best wishes,

PROFESSOR DR ROHANA ABDUL GHANI
Organising Chairperson

PROGRAMME

| DAY 1: 29 March 2021 (Tuesday) HOW COVID-19 CHANGED THE HEALTHCARE SERVICES | |
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| Master of Ceremony: Nur Hafidz Bin Ahamad Faudzi | |
| Time | Programme |
| 0815 - 0830 | Admission of Participants |
| | Opening Ceremony |
| 0840 - 0850 | Welcoming Remark Associate Professor Dr Fazah Akhtar <i>Dean, Faculty of Medicine, University Teknologi MARA (UiTM)</i> |
| 0850 - 0910 | Opening Remark YBhg. Professor Datuk Ts. Dr Hajah Roziah Mohd Janor <i>Vice Chancellor, Universiti Teknologi MARA (UiTM)</i> |
| 0910 - 0940 | Keynote Address and Conference Officiation Yang Berhormat Tuan Khairy Jamaluddin <i>Minister of Health, Malaysia</i> Chairperson: Dato' Dr. Khalid Ibrahim |
| 0945 - 1030 | Plenary 1 The Impact of COVID-19 Pandemic on Healthcare Facilities and Systems: National Perspectives Professor Datuk Dr Rohaizat Yon <i>Professor in Public Health & Consultant Public Health Physician (MSU)</i> <i>Former Deputy Director-General of Health (Medical) MoH (2019 - 2020)</i> Chairperson: Dr. Zahir Izuan Azhar |
| 1030 - 1045 | Break |
| 1045 - 1215 | Symposium 1 Chairperson: Dr. Heo Chong Chin |
| 1045 – 1110 | Positioning Malaysia's Public Health System for the Next Pandemic Dato' Dr Zainal Ariffin Omar <i>Chairman of Volunteers for Community Engagement and Empowerment for COVID-19 (VEE19) & Consultant Public Health Medicine Specialist</i> |
| 1110 - 1135 | Primary Care on the Frontline of COVID-19 Pandemic: When the Going Gets Tough, the Tough Get Going Dr Rozita Zakaria <i>Head of Service for Family Medicine Specialty & Consultant of Family Medicine Specialist, Ministry of Health, Malaysia</i> |
| 1135 - 1200 | Laboratory Diagnosis of COVID-19: Interpretation and Pitfalls Dr Jeyanthi Suppiah <i>Senior Research Officer, Virology Unit, Institute of Medical Research (IMR), Ministry of Health, Malaysia</i> |

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| 1200 - 1215 | Q&A Session |
| Master of Ceremony: Nur Fatihah Bin Ronny Sham | |
| 1215 - 1315 | Free Oral Communication 1 Chairperson: Nur Fatihah Bin Ronny Sham |
| 1315 - 1415 | Lunch Time Webinar (Sponsored by Bio-Med Global) cPass™ SARS-CoV-2 Neutralizing Antibody (NAb) Test for Post-Vaccination Monitoring Dr Chengxun Su <i>Field Application Scientist, Genscript</i> Chairperson: Muhammad Hafizan Bin Mustari |
| 1415 - 1630 | Forum 1 The Aftermath of COVID-19: Is it Time to Integrate the Public and Private Healthcare System? Panellists: 1. Dato' Dr Azman Abu Bakar <i>Member of Commission, Public Services Commission of Malaysia & Former Deputy Director-General, Ministry of Health Malaysia (2019)</i> 2. Dr Sri Wahyu Taher <i>President of Family Medicine Specialist Association & Consultant Family Medicine Specialist</i> 3. Associate Professor Dato' Dr Mohammad Husni Jamal <i>President of WONCA (World Organisation of Family Doctors) Asia Pacific Region & Associate Professor of Family Medicine, Faculty of Medicine, University of Cyberjaya</i> 4. Professor Dr Teo Yik Ying <i>Dean, Saw Swee Hock School of Public Health, National University of Singapore</i> Moderator: Professor Dr Anis Safura Ramli |
| END OF DAY 1 | |

| DAY 2: 30 March 2022 (Wednesday) | | |
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| HOW COVID-19 HAS CHANGED THE MEDICAL RESEARCH LANDSCAPE | | |
| Master of Ceremony: Farrah Hazwani Binti Mohamed | | |
| Time | Programme | |
| 0800 - 0820 | Admission of Participants | |
| 0820 - 0920 | Shortlisted Poster Presentation Chairperson: Dr Amirah Abdul Rahman | |
| 0920 - 0930 | Break | |
| 0930 - 1100 | Symposium 2 | |
| | <u>ROOM 1</u> | <u>ROOM 2</u> |
| | Theme: Covid-19 Vaccine- Friend or Foe? Chairperson: Professor Dr Igor Iezhitsa | Theme: Clinical Research in COVID-19 Chairperson: Dr Mohd Danial Efendy Goon |
| 0930 - 0955 | The importance of RNA research in COVID-19 vaccine development: lessons learned Dr Masita Arip <i>Head of Department & Consultant Pathology, Allergy and Immunology Research Centre, IMR, Ministry of Health, Malaysia</i> | Clinical Research in Stress-related and psychological impacts of COVID-19 lockdown Professor Dato' Dr Andrew Mohanraj <i>President of the Malaysian Mental Health Association & Adjunct Professor of Psychiatry, School of Medicine, Taylor's University</i> |
| 0955 - 1020 | Mix and match COVID vaccines: Is mixing COVID vaccines a good idea? Professor Dr Ammu K. Radhakrishnan <i>Professor in Immunology, Jeffrey Cheah School of Medicine and Health Sciences, Monash University Malaysia</i> | Clinical research on the outcomes and management strategies in seriously ill COVID-19 patients Professor Dr Raman Sharma <i>Senior Professor, Department of Medicine, SMS Medical College, Jaipur, Rajasthan, India</i> |
| 1020 - 1045 | Covid-19: Challenges and the Future Dato' Dr Amar Singh HSS <i>Consultant Community Paediatrician & Child Advocate (Formerly Head of Paediatric Department, Hospital Raja Permaisuri Bainun, Ipoh, Perak, Malaysia and Head, Clinical Research Centre Perak)</i> | Ethical Considerations and Challenges in Medical Research During the COVID-19 Pandemic Dr Amnah Azahar <i>Lecturer in Medical Law & Ethics, Faculty of Medicine, UiTM</i> |
| 1045 - 1100 | Q&A | Q&A |
| 1100 - 1115 | Coffee Break | |

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| 1115 – 1245 | Free Oral Presentation 2 Chairperson: Associate Professor Dr Damayanthi A/P Durairajanayagam |
| 1245 - 1400 | Lunch Break |
| Master of Ceremony: Raja Nur Firzanah Syaza Binti Raja Sharin | |
| 1400 - 1440 | Plenary 2 Cytokine Storm in COVID-19 – Complications and Management Role of Anti-inflammatory in COVID-19 Management (Clinician’s Perspective) Dr Benedict Sim Lim Heng <i>Infectious Disease Consultant, Hospital Sungai Buloh, Ministry of Health, Malaysia</i> Chairperson: Professor Dr Ariza Adnan |
| 1440 - 1530 | Plenary 3 Safety of Covid Vaccines: What We Know and What We Can Do Professor Dr Gagandeep Kang <i>Professor of Microbiology, Wellcome Trust Research Laboratory, Division of Gastrointestinal Sciences, Christian Medical College, Vellore, India</i> Chairperson: Professor Dr Renu Agarwal |
| 1530 - 1710 | Free Oral Presentation 3 Chairperson: Raja Nur Firzanah Syaza Binti Raja Sharin |
| END OF DAY 2 | |

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| DAY 3: 31 March 2021 (Thursday) HOW COVID-19 CHANGED THE MEDICAL EDUCATION LANDSCAPE | |
| Master of Ceremony: Farah Nur Elina Binti Mohd Atan | |
| Time | Programme |
| 0830 - 0900 | Admission of Participants |
| 0900 - 0945 | Plenary 4 Delivering Medical Curriculum in COVID-19 Era: Lesson Learnt Professor Dr Stephen Trumble <i>Head of Department of Medical Education, Melbourne Medical School, University of Melbourne, Australia</i> Chairperson: Professor Dr Nafeeza Mohd Ismail |
| 0945 - 1000 | Break |
| 1000 - 1140 | Forum 2 COVID-19-Enforced Modifications to Medical Learning Panellists: 1. Professor Dr Alam Sher Malik <i>Professor of Paediatrics and Medical Educationist, International Medical School, Management and Science University (MSU), Malaysia</i> |

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| | <p>2. Associate Professor Dr Stuart Lane <i>Associate Professor and Coordinator of Clinical Studies, Sydney Medical Programme, University of Sydney</i></p> <p>3. Dr Lee Shuh Shing <i>Medical Educationalist of Center for Medical Education, Yong Loo Lin School of Medicine, National University of Singapore</i></p> <p>4. Miss Nor Nadhirah Binti Migit Hermanjodanto <i>Year 5 Medical Student, Faculty of Medicine, Universiti Teknologi MARA (UiTM)</i></p> <p>Moderator: Dr Muhammad Huzaimi Haron</p> |
| 1140 - 1300 | <p>Free Oral Presentation 4 Chairperson: Farah Nur Elina Binti Mohd Atan</p> |
| 1300 - 1400 | Lunch Break |
| Master of Ceremony: Nur Hafidz Bin Ahamad Faudzi | |
| 1400 - 1600 | <p>Symposium 3: Chairperson: Professor Dr Effat Omar</p> |
| 1400 - 1430 | <p>Alternative Assessment to Ensure Clinical Skill Competency in Remote Setting: Sharing the Experience</p> <p>Associate Professor Dr Anis Siham Zainal Abidin <i>Associate Professor of Paediatrics and Head of Department of Medical Education, Faculty of Medicine, Universiti Teknologi MARA (UiTM)</i></p> |
| 1430 - 1500 | <p>Clinical Education and Students Engagement: Sharing the Experience of Emergency Remote Teaching during COVID-19 Pandemic</p> <p>Professor Dr Shahid Hassan <i>Professor of Otorhinolaryngology and Professor, International Medical University (IMU) Centre for Education</i></p> |
| 1500 - 1530 | <p>The Future of Medical Education: How Strongly will it be Affected by the Pandemic Experiences?</p> <p>Professor Dr Olle Ten Cate <i>Director, Center for Research and Development of Education, Universiteit Utrecht, Netherlands</i></p> |
| 1530 - 1600 | Q&A session |
| 1600 - 1615 | Break |
| 1615 - 1645 | <p>Best oral and poster award announcement</p> <p>Professor Dr Harbindarjeet Singh <i>Chair of the Scientific Committee</i></p> |
| 1645 - 1700 | <p>Closing Remark</p> <p>Professor Dr Rohana Abdul Ghani <i>Chair of the Organising Committee</i></p> |
| END OF DAY 3 | |

SPEAKER'S ABSTRACT

PLENARY SPEAKER 1 (DAY 1)



Professor Datuk Dr Hj Rohaizat Bin Hj Yon

*Professor in Public Health & Consultant Public Health Physician,
Management & Science University (MSU).
Former Deputy Director-General of Health (Medical), Ministry of
Health Malaysia*

The Impact of COVID-19 Pandemic on Healthcare Facilities & System: National Perspective

COVID-19 has illustrated the global chaos that can be unleashed by newly emerging infectious diseases. Malaysia's past experiences in facing infectious disease outbreaks have strengthened our emergency response system in health. Malaysia has taken unhesitating and revolutionary health emergency initiatives, across multiple sectors. The country's preparedness for the COVID-19 pandemic was powered by early planning and preparation of healthcare facilities and services. COVID-19 remains equally unparalleled in its sequelae, impacting numerous sectors, posing major challenges, and inflicting a diverse paradigm shift.

Through active detection, more and more cases were being detected. Larger number of patients were admitted to government health facilities. From the first wave, second wave (27.2.2020), third wave (20.9.2020) and the emergence of VOC particularly the Delta variant in 2021 had resulted with daily new cases increasing till its highest of 24,599 cases in August 2021. This situation has put stress on the Malaysian healthcare system. With the emergence of Omicron, new daily cases recorded in 2022, have reached more than 30,000.

This pandemic has strained the healthcare system, but yet frontliners continue to tirelessly put their lives on the line, sheltering millions. Hospitals are provoked to refresh and recreate themselves in light of the escalating demands, in the backdrop of chronic resource limitations and constraints. The contributions and help of organizations, the community and numerous agencies are immeasurable, and are invaluable in ramping up our efforts to save lives. A myriad of activities was in motion at the government health clinics. There was a huge surge of PPE utilization both in clinics and hospitals. Multiple activities occurring simultaneously, conducted by health clinics, District Health Offices, Hospitals, State Health Departments, all Programmes at Ministry of Health headquarters.

Nearly 500 clusters exploded all over the country in 2021 and manpower and equipment were still being mobilised to areas where they are most needed, in efforts to relieve the tension on the healthcare system. Workloads at hospitals and clinics are increasing tremendously. Congestion at health clinics and hospitals was unavoidable. Treatment for non-COVID-19 cases have been affected. Several non-COVID-19 public health activities at District Health Offices, such as Dengue and TB Control Programme, School Health Programme were also affected. The number of COVID-19 deaths and "Brought in Dead" were also increasing, requiring not only trained human resources, PPE,

equipment, consumable but also involvement of NGOs and all related Malaysian Religious Authorities in this multi-ethnic society.

Malaysia stepped up efforts to strengthen both the hospital and public health capacity. Existing MOH hospitals were categorised to three types namely Full COVID-19, Hybrid COVID-19 and non-COVID-19 hospitals. As more beds were required for COVID-19 cases, numerous Low Risk COVID-19 Treatment and Quarantine Centres were established nationwide by the Government. Subsequently the private sector also participated in establishing Low Risk COVID-19 Treatment and Quarantine Centres. Private GPs also participated not only in performing swabs, but also doing RTK testing, managing Category 1 and 2 cases. As new cases went up, Covid Assessment Centres (CAC) were established by the Government, which was subsequently followed by establishment of private CAC by the private sector, The potential of digital technology was capitalised by establishing Virtual CAC and parallel to that the capacity of MySejahtera was also upgraded, which enabled it to register vaccination, change address, issuing digital Home Surveillance Order (HSO), digital Release Order (RO), Home Assessment Tool (HAT).

As COVID-19 cases increased, laboratory services in MOH facilities were also affected, hence outsourcing of COVID-19 tests to private laboratories and universities was implemented. As treatment for non-COVID-19 cases have been affected, the Government has outsourced treatment of non-COVID-19 cases to private hospitals nationwide. Several private hospitals and university hospitals also help manage COVID cases.

The National Immunisation Program was introduced in 2021, and was implemented in phases, initially with low coverage but later was intensified. Numerous Vaccination Centres were established, and the private sector took a major part in this vaccination program. With the introduction and good uptake of booster dose, the children & youth immunization program has successfully protected the Malaysian health system. This is evidenced with the emergence of Omicron, although new daily cases in 2022 have reached more than 30,000, majority of these cases are within categories 1 and 2, and very few are in categories in 3, 4, and 5 and needing hospitalisation. Patients who need ventilator support and ICU care have also reduced tremendously and the death has also shown a reducing trend.

A multi-sectoral and collaborative approach, in line with whole-of-government and whole-of-society approaches have shown that we are stronger when we work together towards a common purpose. Everyone worked hand-in-hand, helped to coordinate, make efforts more cogent and rely on each other to achieve a collective goal, to rid the country of the COVID-19 crisis. The unfolding crisis offers many opportunities to identify gaps, prioritise needs and enhance capacity development to strengthen the national health security further. There are numerous impacts and implications of COVID-19 to Malaysian healthcare facilities and systems. Currently COVID-19 is a battle that persists. Malaysia had and continues to face various issues and challenges ahead. The fight continues with a common goal of overcoming those issues and challenges together.

PLENARY SPEAKER 2 (DAY 2)



Dr Benedict Sim Lim Heng

Infectious Disease Consultant, Hospital Sungai Buloh, Ministry of Health, Malaysia

Cytokine Storm in COVID-19 – Complications and Management: Role of Anti-inflammatory in COVID-19 Management

One of the dreaded complications of COVID-19 infection, and indeed the major cause of death in its most severe form, is the development of hyperinflammation, also known as a cytokine storm. This typically occurs as a second phase of illness in the second week of infection after the start of symptoms, following the first phase of the disease, which is the viral proliferation phase. Patients at risk of this cytokine storm phenomena include those who are elderly, the male gender, the unvaccinated and those with chronic medical illnesses like chronic kidney disease, chronic heart failure, chronic respiratory disease, obesity, diabetes, and others.

As this pandemic evolved, the development of this complication has also changed, peaking with the Delta variant wave, and currently less prominently seen in the current Omicron variant wave. Partly, this is also due to an increasing proportion of people who have developed some immunity whether through vaccination or through previous infection. Recognizing the onset of the second phase of the illness is also critical as only a minority endure this second phase of illness. In addition, agents that work in the first phase of illness might be superfluous in the second phase of illness while if the agents used in the second phase of illness are used in the first phase, it can prolong illness and worsen the complications.

The pathogenesis of a cytokine storm is still uncertain and being researched. Two developing hypotheses are an inability to mount a timely antiviral response and an inability to control SARS-CoV-2–driven inflammatory responses. The first hypothesis is thought to be due to 3 factors – the viral load of the infection, defects in the type 1 interferon response and an imbalance in the adaptive immunity of the host. This leads to a failure of timely type 1 interferon response and a delay in clearance of virus. The second hypothesis includes altered myeloid response, pathogenic antibody production and increase in vascular permeability. These hyperinflammatory responses lead to significant tissue damage and impaired tissue repair. Based on these hypotheses, two major targets of treatment in COVID-19 emerge and are understood. The first is to interfere with the virus life cycle and thus prevent delayed viral clearance. This can be done with the use of antiviral agents or monoclonal antibodies that quickly limit viral spread and prolongation in the body. The second target is to regulate or modulate the immune system. This is shown clearly with the partial success of using steroids in patients with this complication. Other successful and more targeted ways of modulating the immune system have been found with the usage of interleukin-6 inhibitors like tocilizumab and sarilumab and Janus kinase inhibitors like baricitinib and tofacitinib.

Clinical trials using these agents have been found to reduce mortality, reduce the need for mechanical ventilation and to shorten the period of hospitalization. The usage of these agents has to be carefully balanced with the timing and recognition of the onset of cytokine storm and the possible side effects and complications of these agents which include concomitant bacterial infections and thrombosis.

**PLENARY SPEAKER 3
(DAY 2)**



Professor Dr Gagandeep Kang

Professor of Microbiology, Wellcome Trust Research Laboratory, Division of Gastrointestinal Sciences, Christian Medical College, Vellore, India

Safety of COVID-19 Vaccines: What We Know and What We Can Do

Dr Gagandeep Kang is India's top virologist. She is the Professor in the Department of Gastrointestinal Sciences at the Christian Medical College (CMC), Vellore, India, and she also directs CMC's Wellcome Trust Research Laboratory. She is a leading researcher with a major research focus on viral infections in children and development of vaccines. She was a key contributor to rotavirus vaccine development in India. She was awarded the prestigious Infosys Prize in Life Sciences in 2016 for her contributions to understanding the natural history of rotavirus and other infectious diseases. In 2019, she became the first Indian woman to be elected as a Fellow of the Royal Society. She has served on several advisory committees mainly related to vaccines, including India's National Technical Advisory Group on Immunisation, the WHO's Global Advisory Committee on Vaccine Safety and the Immunisation and Vaccine Implementation Research Advisory Committee. She chairs the WHO SEAR's Regional Immunisation Technical Advisory Group since 2015. She is also an Independent Director of the Hilleman Laboratories, a partnership established to make affordable vaccines by Merck and the Wellcome Trust. Since 2020, Prof Kang has been an ex-officio member of a working group on COVID-19 vaccines established by the Strategic Advisory Group of Experts at the WHO.

PLENARY SPEAKER 4 (DAY 3)



Professor Dr Stephen Trumble

Head of Department of Medical Education, Melbourne Medical School, University of Melbourne, Australia

Delivering Medical Curriculum in the COVID-19 Era: Lessons Learnt

The onset of the COVID-19 pandemic in early 2020 was the beginning of an unprecedented, existential crisis for the whole planet. Epidemiologists and public health physicians were thrust into the spotlight, and the need to continue or even accelerate the training of health professionals came into sharp focus.

As we emerge into the next phase of the pandemic, with vaccination having replaced isolation as the main containment strategy, we have learned a lot about many things to do with the business of educating new doctors. This presentation will describe some lessons learned in Australia about each of:

- i. medical curriculum design and delivery when face-to-face teaching is not possible,
- ii. the maintenance of clinical placements during periods of extreme workforce pressure,
- iii. the resilience of students and staff in the face of multiple challenges,
- iv. and maintaining our own levels of performance when priorities are conflicting.

The Melbourne medical course had just embarked on a major redesign and reaccreditation cycle when the pandemic hit, meaning that our carefully-planned change management process was swept away by the need to find immediate solutions for unanticipated problems. Rather than hindering the improvement of our curriculum and the way we were delivering it, however, the disruption caused by the pandemic allowed us to introduce much-needed changes faster and with greater acceptance from stakeholders. Many of the barriers to curriculum reform were swept away, and medical schools around Australia and New Zealand collaborated as never before.

In 2022, with our redesigned medical curriculum rolling out from the end of January, it is clear that many of the changes that were implemented to accommodate the pandemic need to be maintained into the future. Amongst these are a new recognition that content delivered within the core of the course has to be closely aligned with what students need for competence, that consistency of delivery at multiple sites is important for equity, and that our students have valid roles to play within the healthcare team even before graduation. Participants are encouraged to think about the changes they have observed within their own context that should be maintained, and what needs to go back to “the way it was” as quickly as possible.

SYMPOSIUM 1 (DAY 1) SPEAKER 1



Dato' Dr Zainal Ariffin Omar

*Chairman of Volunteers for Community Engagement and Empowerment for COVID-19 (VCEE19).
Consultant Public Health Medicine Specialist.*

Positioning Malaysia's Public Health System for the Next Pandemic

In late December 2019, Chinese authorities reported several cases of “viral pneumonia” in the city of Wuhan. Later, on 11 March, the World Health Organisation (WHO), formally declared the coronavirus outbreak a global pandemic. Since then, many routines in every aspect of our life changed to new-normal.

In the past 20 years, Malaysia has responded to every public health crisis with excellent experiences and outcomes. We are very fortunate because our health system has been built on the solid background for the current and immediate future, including a commendable Crisis and Epidemics Crisis Preparedness Plan. The COVID-19 pandemic has made clear that the nation's safety, health, and economic prosperity are dependent on a robust public health system. COVID-19 pandemic indicates that Malaysia should have a robust and resilient health system. Both for crisis and pandemic as well as to take care of our sick people and to maintain wellness and well-being of the general population.

Even as the pandemic is easing, Malaysia must prepare for possible other pandemics from dangerous infectious disease or a widespread natural or man-made disaster. We must transform our health system to strengthen especially in basic elements of prevention, preparedness, universal Healthcare, public health, political leadership and people. Our health system should give more emphasis on the lack of workforce and modern data systems to support surveillance, contact tracing, testing, guidance on mitigation measures, administration of intervention, and clear communication that is needed to manage health crises.

Community-based health care is an essential part of primary care at all times; in the context of the COVID-19 pandemic. In addition, many Malaysians have chronic underlying health conditions such as obesity, smoking, chronic diseases and heart disease, leaving them more likely to develop severe illness from many infections and stressful situations. We should have more advanced primary care facilities in the periphery, marginalised and urban areas. We should give more emphasis on the use of current ICT and digital technology in our healthcare delivery system. In addition, the whole-government approach should also involve greater community participation through community engagement and empowerment.

SYMPOSIUM 1 (DAY 1)
SPEAKER 2



Dr Rozita Zakaria

*Consultant Family Medicine Specialist, Head of Clinic, Precinct 18 Putrajaya Health Clinic.
Head of Service for Family Medicine Specialty, Ministry of Health Malaysia.*

Primary Care on The Frontline of COVID-19 Pandemic: *When the Going Gets Tough, The Tough Get Going.*

COVID-19 is undoubtedly the greatest communicable disease outbreak to have hit Malaysia. The pandemic brought fear to many and it changed many aspects of our life. It was a difficult situation for everybody, particularly the frontliners. During this tough period of the COVID-19 pandemic, health care workers in primary care being a group of tough people, were at the forefront of managing patients suspected of having COVID-19 infection and also confirmed COVID-19 patients.

The speaker will describe the roles of primary care in managing COVID-19 followed by introduction to the COVID-19 Clinical CARE Pathway in which all COVID-19 patients have to undergo. Finally, the speaker will also deliver a short guide on the use of oral antivirals in primary care.

SYMPOSIUM 1 (DAY 1)
SPEAKER 3



Dr Jeyanthi Suppiah

Senior Research Officer, Virology Unit, Institute of Medical Research (IMR), Ministry of Health, Malaysia

Laboratory Diagnosis of COVID-19: Interpretation and Pitfalls

Diagnostic testing for COVID-19 is a critical component to the overall prevention and control strategy. Implemented tests algorithm should be affordable and accessible to all and able to generate rapid and reliable results. This is to ensure appropriate clinical care for patients and inform actions to prevent onward spread of SARS-CoV-2. The World Health Organization (WHO) recommended nucleic acid amplification tests (NAAT) such as Real-Time RT-PCR (rRT-PCR) that targets the SARS-CoV-2 genome to be used as the main diagnostic tool in laboratory testing. Other lab tests such as virus isolation and genomic sequencing were suggested if deemed needed or for surveillance purpose. The presentation highlights the interpretation of laboratory test particularly PCR in diagnosing COVID-19, pitfalls of the test and possible solutions for improvement. Additionally, the presenter intends to share the experience of the Institute for Medical Research (IMR) in managing COVID-19 in view of early preparedness and implementation of laboratory testing.

SYMPOSIUM 2 (DAY 2, ROOM 1)
SPEAKER 1



Dr Masita Arip

Head of Department & Consultant Pathologist, Allergy and Immunology Research Centre, IMR, Ministry of Health, Malaysia

The Importance of RNA Research in COVID-19 Vaccine Development: Lesson Learnt

The coronavirus (CoV) now named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is responsible for the disease coronavirus disease 2019 (COVID-19), and was first detected in early December 2019, in Wuhan City, Hubei Province, China. The disease was initially described as a “pneumonia of unknown etiology” with high fever that was not responding to drug treatment. SARS-CoV-2 is a zoonotic virus related to the severe acute respiratory syndrome coronavirus (SARS-CoV) that was responsible for a 2002 outbreak and is also related to Middle East respiratory syndrome coronavirus (MERS-CoV), responsible for Middle East respiratory syndrome. On Jan. 11, 2020, the genetic sequence of the new coronavirus, later named SARS-CoV-2, was published in Genbank, an international repository available to scientists around the world. On 16 March 2020, the mRNA COVID-19 vaccine (mRNA-1273) from Moderna entered phase I clinical trials.

An ideal antigen should be selected for the development of a safe and effective COVID-19 vaccine. The S protein is the major antigen in most COVID-19 vaccine candidates under development as it contains the major neutralizing epitopes and is located on the surface of the viral particle. Instead of delivering a virus or a viral protein, RNA vaccines deliver genetic information that allows the body’s own cells to produce the viral protein. Synthetic mRNA that encodes a viral protein then borrows this machinery to produce many copies of the protein. These proteins stimulate the immune system to mount a response, without posing any risk of infection. A key advantage of mRNA is that it is very easy to synthesize once researchers know the sequence of the viral protein they want to target. Most vaccines for SARS-CoV-2 provoke an immune response that targets the coronavirus spike protein, which is found on the surface of the virus and gives the virus its characteristic spiky shape.

Messenger RNA vaccines encode segments of the spike protein, and those mRNA sequences are much easier to generate in the lab than the spike protein itself. Messenger RNA is a large hydrophilic molecule. It doesn’t naturally enter cells by itself, and so these vaccines are wrapped up in nanoparticles that facilitate their delivery into the cells. This allows the RNA to be delivered inside of cells, and then translated into proteins. One drawback to mRNA vaccines is that they can break down at high temperatures, which is why the current vaccines are stored at such cold temperatures. Pfizer’s SARS-CoV-2 vaccine has to be stored at -70 degrees Celsius (-94 degrees Fahrenheit), and the Moderna vaccine at -20 C (-4 F). One way to make RNA vaccines more stable, is to add stabilizers and remove water from the vaccine through a process called lyophilization, which has been shown to allow some mRNA vaccines to be stored in a refrigerator instead of a freezer.

SYMPOSIUM 2 (DAY 2, ROOM 1)
SPEAKER 2



Professor Dr Ammu K. Radhakrishnan

Jeffrey Cheah School of Medicine and Health Sciences, Monash University, Malaysia

Mix and Match COVID Vaccines: Is Mixing COVID Vaccines a Good Idea?

Ammu K. Radhakrishnan*, Samantha Khoo Si Mei, Ashwini Mahendran Saatheeyavaane B. Pillai

*Email: ammu.radhakrishnan@monash.edu

Background: It has been more than two-years since the emergence of the severe acute respiratory syndrome coronavirus-2 (SARS-COV-2), which caused the Coronavirus disease-2019 (COVID-19) pandemic in March 2020. There is no doubt that COVID-19 is a highly contagious respiratory infection that endangered the health and claimed the life of millions, which subsequently impacted the healthcare systems and economies worldwide. As the SARS-CoV-2 is a novel coronavirus, there is insufficient information on its short- and long-term effects. Vaccines have been used since the time of Edward Jenner and Louis Pasteur to help us develop immunity against a variety of pathogens. So, it is not surprising that within a short period of time, various types of COVID-19 vaccines such as mRNA vaccines, viral vector vaccines, and inactivated vaccines were rapidly developed and deployed worldwide. Despite limited testing and research, the newly minted COVID-19 vaccines were given the Emergency Use-Licence (EUL) by the World Health Organization (WHO) due to the gravity of this pandemic. The efficacy of these COVID-19 vaccines are being debated as more vaccines are being developed. Now with concerns of emerging new strains of the virus and limited vaccine availability, heterologous vaccine schedules are being considered. This paper aims to present the results of a scoping review of the available evidence to compare the immunogenicity of heterologous and homologous vaccines to determine which regime confers a better immunity against COVID-19. **Method:** Literature search was conducted on three electronic databases (Ovid MEDLINE, PubMed and Scopus). Studies obtained from the databases were screened for relevance and eligibility using an online platform (Covidence). **Results and Discussion:** A total of 27 articles were shortlisted for data extraction and analysis. In terms of study methodology, 17 were observational studies, seven were randomized controlled trials (RCT) and three were clinical trials. The analysis demonstrated that participants receiving the heterologous vaccination regimens generated higher levels of IgG antibodies to the spike protein of the SARS-COV-2 virus, antibodies to the receptor binding domain (RBD) and T-cell response to the spike protein compared to those who received the homologous vaccination regimens. Furthermore, the heterologous vaccination produced a higher titre of neutralising antibodies against several variants of concerns (VOC) of the COVID-19 virus including alpha, beta, gamma, delta and omicron. There were no severe vaccine related adverse events reported in these studies and some of the common local and systemic side-effects were manageable. **Conclusion:** Heterologous vaccination regimes were able to induce strong humoral and cellular immunity, which were comparable to the homologous vaccination regime. In addition, the heterologous regimes produced stronger neutralizing antibody activity against VOC.

SYMPOSIUM 2 (DAY 2, ROOM 1)
SPEAKER 3



Dato' Dr Amar-Singh HSS

*Consultant Paediatrician & Honorary Senior Fellow, Galen
Centre for Health and Social Policy*

COVID-19 Challenges and the Future

After more than two years of a COVID-19 pandemic the world and Malaysians are fatigued. They want the pandemic to end and for all of us to 'get on with our lives'. But is the end in sight? The reality about COVID-19 is that it is here to stay for a long, long time and that most, if not all, of us will get infected at some time with one variant or a future one; some may get infected a number of times. Fortunately, vaccines have significantly improved outcomes but this only applies to our current variants.

As Dr Maria Van Kerkhove, an infectious disease epidemiologist and technical lead for the World Health Organisation said in February 2022: *"The next variant of concern will most likely be more transmissible as compared to Omicron because it will have to overtake the strains that are currently circulating. Future variants may also have a greater ability for immune escape (vaccines will not be as effective against them)."*

Hence, we must continue to have vigilance and work to protect our most vulnerable members of society. Children under 5 years have no vaccination as yet. We need to advocate for full vaccination of children aged 5-11 years and boosters for adults, especially adults with disabilities, those immunocompromised, those with chronic illness and the elderly. These vulnerable individuals are at higher risk even if vaccinated but vaccination makes a major impact on reducing mortality.

We must remember that there are three effects of a COVID-19 infection. Firstly, the immediate hospital admission, organ damage and death risk. Secondly, the intermediate risk of Long Covid that may affect even those who have a mild infection. Note that data from the UK Office for National Statistics on Long Covid in children showed that 1.0% of all primary school and 2.7% of secondary school students in the UK have experienced Long Covid. Adult Long Covid rates are in the region of 20-30%. And thirdly, the still poorly understood Long Term effects of COVID-19 on the brain and other organs which may lead to disability 10-30 years from now (e.g. early onset dementia). This appears to have happened with other pandemics, like the Spanish Flu, and may result in a higher long-term burden to society than the current pandemic. We must also address the mental health pandemic that has risen in tandem with the COVID-19 pandemic.

Currently, measures to fight COVID-19 are hampered by a fake news pandemic and what I term 'Covid Wars', even among medical personnel. We need to work to minimise this as it causes confusion among the public and leads to misleading outlooks and behaviour that may be less than safe.

It is extremely difficult to predict what will happen in the next 1-2 years as it is dependent on many factors which include:

- i. What burden of disease and death from new variants is acceptable?
- ii. What level of disruption to our healthcare capacity are we willing to accept?
- iii. Will new vaccine resistant variants of concern emerge?
- iv. Will we need yearly vaccine boosters or can we develop a pan-coronavirus vaccine?
- v. What kind of meaningful social behaviour and change will the public make?

Hence, we as a society need to make significant long-term changes - a new way of life now and 'post' Covid that will enable us to live better now as well as face the next pandemic that will come. One key is to invest in our public health care system that has been neglected for many years. Important changes include making improvements to indoor ventilation in all buildings mandatory and a culture of using masks (reliable FFP2/KF94 masks) more often indoors or if unwell. We need to change our work ethic/behaviour to allow routine work from home, offer routine paid leave for unwell staff, move more meetings and conferences to online platforms. It is our collective societal behaviour that will determine our future.

SYMPOSIUM 2 (DAY 2, ROOM 2)
SPEAKER 1



Dato' Professor Dr Andrew Mohanraj

President of the Malaysian Mental Health Association & Adjunct Professor of Psychiatry, School of Medicine, Taylor's University

Clinical Research in Stress-related and psychological impacts of COVID-19 lockdown

Dr Andrew Mohanraj served the Ministry of Health Malaysia for 12 years before taking up an international assignment after the Asian Tsunami of 2004. As a Consultant Psychiatrist, Mental Health Development Adviser, he has done pioneering work in the establishment of sustainable psychosocial rehabilitation services in Indonesia (post disaster, post conflict), The Philippines (post disaster) and Timor Leste (post conflict). His main achievement in these countries was the campaign of removing physical restraints in people with chronic mental illness.

In 2012, Dr. Andrew Mohanraj returned to Malaysia under the Return of the Expert Programme by Talent Corporation, a unit under the purview of the Prime Minister's Department. He subsequently joined Perdana University Graduate School of Medicine (in collaboration with Johns Hopkins Medical School, Baltimore) as Associate Professor in Psychiatry and its first Director of Clinical Clerkship. He continues his consultancy work for local and international government and non-government organisations, Dr Mohanraj also served two terms as a member of the Mental Health Promotion Advisory Council to the Minister of Health Malaysia. In 2013, in recognition of Dr. Andrew Mohanraj's international work in the promotion of the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), he was appointed by the then Acting Minister for Community Development as a member of the National Council for Persons with Disabilities, in which he served two terms consecutively.

Besides running his psychiatric practice in Mont Kiara, Kuala Lumpur, he is engaged in periodic consultancy to provide mental health services to refugees and asylum seekers whose intended destination is Australia. He is also actively involved in the mainstreaming of mental health issues in Malaysia as the President of the Malaysian Mental Health Association and Policy Advisor to the Green Ribbon Group Malaysia. He also begins his second term as a member of the Board of Directors of the World Federation for Mental Health (WFMH). He has also taken up an academic position as Adjunct Professor of Psychiatry at Taylor's University Medical School, Malaysia. As an animal lover and an advocate for animal rights, he has recently taken up the challenge of assuming the post of President of the recently registered Society for the Prevention of Cruelty to Animals, Malaysia. Beginning 16th July 2021, Dr Andrew Mohanraj has taken up a consultancy with the World Health Organization (WHO) Regional Office as a Mental Health and Substance Abuse Consultant.

SYMPOSIUM 2 (DAY 2, ROOM 2)
SPEAKER 2



Professor Dr Raman Sharma

Senior Professor, Department of Medicine, SMS Medical College, Jaipur, Rajasthan, India

Clinical Research on the Outcomes and Management Strategies in Seriously Ill COVID-19 Patients

The COVID-19 pandemic ramified negative repercussions globally, thereby igniting large scale medical research worldwide in a short span of time. The management of COVID-19 since its first wave has evolved drastically with emerging new data from innumerable clinical trials. There has been rejigging and repurposing of therapeutic drugs to refine the armamentarium in management of severely ill COVID-19 patients in order to improve outcomes.

Severely ill COVID-19 cases are defined as those with acute hypoxemic respiratory failure requiring mechanical ventilation with oxygen saturation $<90\%$ at room air, respiratory rate >30 breaths/min and a CT severity score $>15/25$. Management of these cases includes a two-pronged approach: one being general supportive care and the other being specific therapeutic management. General supportive care includes oxygenation, ventilation, maintaining hemodynamics, and maintaining other vital organ functions. Oxygenation is achieved through face masks, high-flow nasal oxygen, non-invasive (CPAP) or invasive mechanical ventilation to target saturation $>90\%$ and $>92-96\%$ (pregnant) in adults. The RECOVERY-RS trial demonstrated significantly reduced risk of intubation and mortality with initial early use of CPAP (36.3%) versus conventional oxygen therapy (44.4%) in acute hypoxemic respiratory failure. The significance of prolonged awake prone positioning sessions (16 hours/day) in severe ARDS (defined as $\text{PaO}_2/\text{FiO}_2 <150$ mmHg) has been proven in the PROSEVA trial, where in both 28-day (16% versus 32.8%) and 90-day (23.6% versus 41.0%) mortality was significantly reduced in the prone positioning group versus supine positioning.

NIH guidelines recommend using crystalloids for maintaining euvolemia, and norepinephrine as the first choice of vasopressor followed by vasopressin for septic shock to target a mean arterial pressure between 60-65 mmHg. Monitoring of dynamic parameters such as skin temperature, capillary refilling time, and/or lactate levels to assess hemodynamic status is recommended. There is insufficient evidence for empirical antibiotic usage in severe COVID, in absence of other indications and if initiated needs stringent antimicrobial stewardship.

A meta-analysis of studies of hospitalized COVID-19 patients treated with VTE prophylaxis found an overall VTE prevalence of 14.1%. Based on results of three major (ATTACC/ACTIV-4a/REMAP-CAP) and two smaller trials (RAPID, and HEP-COVID); the NIH guidelines recommend using prophylactic dose anticoagulation with low molecular weight heparin (LMWH) for all hospitalized individuals including pregnant adults without any contraindication or bleeding risk, but

recommend using therapeutic dose anticoagulation for those on low flow oxygen, not requiring ICU care with D-dimer levels above twice the upper limit of normal, for 14 days or until discharge, whichever is earlier. The INSPIRATION trial found no difference for the composite end point of venous and arterial thrombosis, ECMO, or all-cause mortality at day 30 in ICU patients treated with intermediate (enoxaparin 1mg/kg daily) versus prophylactic dose (45.7% versus 44.1%) of anticoagulation; it rather had increased risk of major bleeding (2.5% versus 1.4%). Hence, NIH panel recommends use of prophylactic dose LMWH for ICU COVID-19 patients. The use of Aspirin except for specific indications like ischemic stroke or coronary artery disease, is not recommended in COVID-19 based on the lack of mortality (17%) benefit at day 28 and increased risk of major bleeding (1.6%), based on results of the RECOVERY trial both during and post discharge.

The pathogenesis of COVID-19 involves an initial viraemic phase followed by a dysregulated immune response and hyperinflammatory phase. Based on data from several major trials like the RECOVERY, ACTT-1, PINETREE, Solidarity, DisCoVeRy, COVID-STEROID-2, COV-BARRIER, ACTT-2, STOP-COVID, EMPACTA and REMAP-CAP the following recommendations have been made by NIH regarding management of seriously ill COVID-19 patients:

| | |
|---|--|
| Hospitalized but not requiring Oxygen | <ul style="list-style-type: none"> • Recommends AGAINST the use of Dexamethasone. • Early Remdesivir (PINETREE trial) may be considered in those at high risk of progression |
| Hospitalized and requiring low flow oxygen | Recommends using either one of the options: <ul style="list-style-type: none"> • Remdesivir • Dexamethasone* plus Remdesivir • Dexamethasone* alone |
| Hospitalized and requiring oxygen by either high- flow nasal oxygen or Non-invasive ventilation | Recommends using either one of the options: <ul style="list-style-type: none"> • Dexamethasone* • Dexamethasone* plus Remdesivir |
| Hospitalized and requiring either mechanical ventilation or ECMO | <ul style="list-style-type: none"> • Dexamethasone For those within 24 hours of admission to ICU: <ul style="list-style-type: none"> • Dexamethasone plus IV Tocilizumab |

*For those on dexamethasone with increasing need for oxygen support or clinical and laboratory evidence of systemic inflammation, further addition of either oral Baricitinib (4mg per day for 14 days) or IV Tocilizumab (8mg/kg IV single dose) may be beneficial. If Baricitinib is not feasible, Tofacitinib may be used; and if Tocilizumab is not feasible, then use of Sarilumab may be considered.

Use of high-titre convalescent plasma is not recommended in hospitalized adults without impaired humoral immunity as it was associated with more adverse events and no difference in, in-hospital mortality or organ free support days as compared to standard care, evidenced from results of RECOVERY, CONCOR-1, REMAP-CAP and PlasmAr trials. The outcome of seriously ill COVID-19 patients is determined by underlying risk factors and laboratory markers of disease severity and progression. The consistent major risk factors are age ≥ 65 years, male sex, co-morbidities like obesity, chronic cardiac and pulmonary conditions, hypertension, diabetes, cerebrovascular accidents, chronic kidney disease, renal replacement therapy, cancer; laboratory parameters such as D-dimer ($> 1000\text{ng/mL}$), CRP($>100\text{mg/L}$), LDH($>245\text{U/L}$), Troponin($>2\text{xULN}$), lymphopenia, neutrophilia), severity of ARDS and organ dysfunction at time of admission.

The mortality associated with COVID-19 varies across the globe. The mortality is less than that associated with SARS-CoV-1 and MERS. Mortality is primarily driven by presence of ARDS (ranges between 12-78%). Length of ICU stay and days of mechanical ventilation also depend on presence and severity of COVID-19 associated ARDS, and with effective therapeutics the duration of both stay and intubation have declined. COVID-19 also has long-term sequel in the form of post-acute COVID syndrome (PACS) due to prolonged intubation and ICU stay.

The gamut of clinical research has highlighted the significance of global health, the challenges in the global response to initiate and coordinate trials in times of tremendous uncertainty and the need for high quality clinical trial research to provide more conclusive results.

SYMPOSIUM 2 (DAY 2, ROOM 2)
SPEAKER 3



Dr Amnah Azahar

*Lecturer in Medical Law & Ethics
Department of Medical Law & Ethics, Faculty of Medicine, UiTM*

Ethical Considerations and Challenges in Medical Research During The COVID-19 Pandemic

The COVID-19 pandemic has had a tremendous impact on medical research. The focus on developing a vaccine and treatment for COVID-19 is, in fact, affecting many ongoing and upcoming medical research on other diseases. In addition, implementation of public health measures such as movement control order, physical distancing, restrictions on mass gathering and quarantine had also influenced the conduct of research during the pandemic. Although these preventive strategies helped in controlling the spread of COVID-19, they have led to several challenges within the field of research ethics that can affect: 1) the researchers, 2) the research participants, and 3) the quality of research outputs. These challenges may also lead to difficulties in fulfilling the seven requirements to make clinical research ethical.

Nonetheless, it is an ethical imperative to conduct research during the pandemic as some research might introduce novelties that could enhance public knowledge. However, the necessity to rapidly produce new evidence must be balanced with the realities of the situation. Therefore, to support the development of medical research during COVID-19, the World Health Organization (WHO) has outlined nine recommendations of ethical standards that should be adhered to by the researchers, review bodies, funders, publishers, and manufacturers to ensure ethical research conduct during COVID-19.

SYMPOSIUM 3 (DAY 3) SPEAKER 1



Associate Professor Dr Anis Siham Zainal Abidin

Associate Professor of Paediatrics and Head of Department of Medical Education, Faculty of Medicine, Universiti Teknologi MARA (UiTM)

Alternative Assessment to Ensure Clinical Skill Competency in Remote Setting: Sharing the Experience

COVID-19 pandemic has undoubtedly disrupted the long-established traditional structure of medical education. The new limitations of face-to-face encounter have accelerated the development of an online learning environment, comprising both of asynchronous and synchronous distance education, and the introduction of novel ways of student assessment. In Faculty of Medicine UiTM, we were handling this crisis as early as March 2020 aiming to minimise serious implications to medical students and the impact to their academic trajectories. All things considered, the urgency for rapid and novel adaptations to the new circumstances has functioned as a springboard for remarkable innovations in medical education, including the promotion of work-place based assessments, online proctored theory and clinical examinations, and the use of clinical simulation centre.

SYMPOSIUM 3 (DAY 3)
SPEAKER 2



Professor Dr Shahid Hassan

Professor of Otorhinolaryngology, International Medical University (IMU) Centre for Education

Clinical Education and Students Engagement: Sharing the Experience of Emergency Remote Teaching during COVID-19 Pandemic

Background: Practice to explore factors influencing the students' engagement in the delivery of online clinical teaching during the COVID-19 pandemic was a new experience for many. Students' engagement technique has been studied in clinical training but factors influencing engagement under pandemic conditions have not yet fully explored. It was an added responsibility on the teaching faculty to research and publish, and direct the students' research topics to investigate clinical teaching faced with unprecedented challenges of Covid-19 crisis. A demands-resources-theory has helped the author to hypothesize that pandemic-related difficulties in clinical training and eLearning resources for online clinical teaching with desired students' engagement during the pandemic. Pandemic-related factors influencing the student's engagement will be shared. Experience: Priorities set for research and publishing the innovated concepts of clinical teaching and modifying the curriculum delivery influenced by the restrictions imposed on F2F was a major decision. Workplace-based clinical teaching, students' removal from their clinical placement and motivating them for students' engagement in clinical training as emergency remote teaching were the influencing factors. Online clinical teaching based on educational concepts of flipped classroom model, Kolb's experiential learning cycle, hypothetico-deductive and think a loud approach, Gibb's reflective cycle, metacognitive skills, Gagne's instructional model, microlearning and digitisation of content were explored. All these methods were made student centric and focus being the students' wellbeing and online engagement. Results: The most important factor that has its impact on individual institutions, was decision to adopt changes based on educational principles and pedagogy combined with technology. However, emergency remote teaching using technology was not merely due to necessity rather than a need. Suitable digitisation of learning supports and developing faculty and students' competencies with eLearning were identified as important study resources for study engagement. However, improving emotional resilience, reliance on directed-self learning, creating microlearning content, digitalisation of lesson plan for asynchronous learning and developing and designing of online bedside teaching, task based learning, clinical skills learning were the game changer in students' engagement. Conclusions: In any emerging crisis like Covid pandemic, medical institutions should focus on providing clinical teaching online with innovative ideas and ways to support students lacking in eLearning and pedagogy. Besides, students should be developed to adopt to new norms in clinical training to continuing clinical learning even if it has some compromises from, "show how" to "know how" level. Reflective practice, virtual medical clinic and digital scratch card for partial credit technique with formative assessment were the other practices the author experienced to monitor students' self-evaluation in a formative assessment environment.

SYMPOSIUM 3 (DAY 3) SPEAKER 3



Professor Dr Olle ten Cate

*Director, Center for Research and Development of Education,
University Medical Center Utrecht, the Netherlands*

The Future of Medical Education: How Strongly will it be Affected by the Pandemic Experiences?

In March 2022, we seem to face the tail of the pandemic crisis that held the world hostage for over two years. It may be too early to draw conclusions about its long-lasting effects on education in the health professions, but the many studies and analyses in HPE seem to show plusses and minuses.

Definitely, the pandemic had severely affected the generation of students who were enrolled in preclinical and clinical education in the period 2020-2023, just like in other sectors of society. However, the question is to what extent the medical graduates will show lasting deficiencies in the long term. So far, we have not seen a substantial negative effect.

At the same time, the pandemic has stimulated the advancement of technology in education. This has not only supported techniques for education but also theory formation about the significance and the shades of presence in education. This may be regarded as enrichment of education.

The pandemic has also affected the definition of the competence for which medical schools train medical students. Medical graduates and medical specialists may have to be prepared to face medical tasks that require flexibility and response to unexpected population health demands.

The presentation will go more deeply into these issues and will also touch upon international differences in the medical continuum, and on the question how entrustable professional activities can serve the future demands of health professionals in a post-pandemic era.

ORAL ABSTRACTS

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GAUGING PRIVATE SECTORS CONTRIBUTION IN COMPETITIVE HEALTH-CARE STRUCTURE: A COMPARATIVE APPROACH OF MALAYSIA AND SCOTLAND

Wan Liza Md Amin @ Fahmy ^{1*}, Abdul Mohkti Abdullah ²

1. Faculty of Law, University Teknologi MARA, Shah Alam Campus, Selangor, Malaysia. Sabbatical, Faculty of Law, University of Edinburgh, Edinburgh, Scotland, United Kingdom. Email: wanliza@uitm.edu.my
2. ENT Department, Sultanah Bahiyah Hospital, Kedah, Malaysia. Sub Specialist, St John Hospital, Livingston, Scotland, United Kingdom.

Introduction: This article reflects on an investigation of the private health care market players' participation in Malaysia's Health care structure. The possibilities of how a competitive structure healthcare framework could enhance efficiency of accessibility and affordability within a consumer–market player's benefits framework was examined. A deregulated competitive market structure employs general practitioners (GP) as independent contractors and pharmacies as part of the national healthcare system. **Methods:** This study employed comparative documentary/doctrinal examination and qualitative analysis of Malaysia healthcare system and the Scottish NHS framework. This study, however, did not aim to review a privatisation regime in the system but offer wider options to healthcare to maximise consumer welfare. Decentralisation through deregulation would address health care delegation and budgetary constraints. The competitive market structure does not facilitate a shift of the responsibilities but rather it would establish a competitive market structure that facilitates the private sector to be part of the existing Malaysia healthcare system similar to the NHS system in Scotland whereby GP would be available to provide medical services and prescribed medications could be obtained from pharmacies. **Result:** The findings present structural suggestions and materials to facilitate a new direction to a competitive healthcare market structure in Malaysia. Part 1 documents a thematic analysis of the present national healthcare framework in Malaysia and Scotland. Part 2 documents the competitive structure justifications and challenges in both health systems. **Conclusion:** The conceptual recommendations for workable national healthcare sustainability goals.

HYGIENE AS OBLIGATORY DUTY OF ISLAM TO MEET THE RISING NEEDS FROM THE PANDEMIC COVID-19 ACCORDING TO THE NEW NORM

Zainab Hisham^{1*}, Zanirah Mustafa@Busu², Noraini Junoh¹, Nik Zam Nik Wan³, Nik Muniyati Nik Din², Nurhidayah Muhammad Hashim⁴, Zulkarnain Yusoff¹

1. Academy of Contemporary Islamic Studies (ACIS), Universiti Teknologi MARA, Machang Campus, Kelantan. Email: 2021804206@uitm.edu.my
2. Academy of Contemporary Islamic Studies (ACIS), Universiti Teknologi MARA, Kota Bharu Campus, Kelantan.
3. Faculty of Accountancy, Academy of Contemporary Islamic Studies (ACIS), Universiti Teknologi MARA, Machang, Campus, Kelantan.
4. Academy of Contemporary Islamic Studies (ACIS), Universiti Teknologi MARA Shah Alam, Selangor.

Introduction: Attention to cleanliness is an essential foundation of faith. Every Muslim must maintain the cleanliness of the human body and requires a mandatory mode of hygiene. The Covid-19 pandemic will bring uncertainties that affect hygiene and the necessities of healthy living. Thus, the article on hygiene and beneficial living aims to assess the level of hygiene practices among the Muslim community to protect themselves from COVID-19 infection. This article aims to find out the organization of personal hygiene and healthy living that will help maintain interest in performing duties while maintaining cleanliness in daily routines, especially during the COVID pandemic among the Muslim community. **Methods:** This study used a qualitative descriptive research approach. Library research is done through books, magazines, journals, the internet and so on. In addition, by conducting observational studies from previous research studies as well as the views of eminent scholars. **Results:** The results of empirical tests will provide a basis for managing mandatory tasks in moderate or adverse conditions. The findings show that a) significant demands of personal hygiene practices according to Islamic Fiqh and its comparison according to modern medicine relate to health to protect themselves from COVID-19 infection and b) there is a positive influence on inconsistent hygiene practices. **Conclusion:** Appropriate measures can be taken to initiate the development of compulsory duty activities according to the requirements of the new norm, especially to prevent infection of any disease, including COVID-19 epidemic.

BARICITINIB, A JANUS KINASE INHIBITOR/BLOCKER REDUCED MORTALITY/DEATH AND DISEASE PROGRESSION IN SARS-COV-2 VIRUS INFECTED PATIENTS: A META ANALYSIS OF CLINICAL STUDIES

Sivananthan Manoharan^{1*}, Lee Ying Ying²

1. Molecular Pathology Unit, Cancer Research Centre, Institute for Medical Research, National Institutes of Health, Ministry of Health Malaysia, Setia Alam, 40170 Shah Alam, Selangor, Malaysia.
2. Asia Metropolitan University, Bandar Baru Seri Alam, 81750 Johor Bahru, Johor, Malaysia. Email:

Email: sivananthan@moh.gov.my

Introduction: Addition of recent clinical trials' results related to baricitinib in the management of SARS-CoV-2 virus infected patients are conflicting. The aim of this systematic review and meta-analysis was to evaluate the efficacy of baricitinib in Covid-19 patients. **Methods:** Search engines such as ScienceDirect, PubMed and Google Scholar were searched thoroughly. Thirteen articles which met the inclusion criteria were analysed. **Results:** The pooled data of RCTs and non-RCTs revealed baricitinib treatment significantly reduced the mortality rate in Covid-19 patients with risk ratio (RR) in fixed-effect model= 0.59 [95% CI=0.49, 0.70; $p<0.00001$]. Subgroup meta-analysis of RCTs was conducted. Baricitinib significantly reduced the mortality rate in RCTs with RR in fixed-effect model= 0.63 [95% CI=0.48,0.81; $p=0.0004$]. No heterogeneity was found in any analysis related to mortality. On the other hand, to address high heterogeneity related to block/reduce disease progression (BDP) research question, the authors pooled RCTs and nRCTs for BDP and removed 2 publication bias (PB) articles which were identified through funnel plots and found out very low heterogeneity with $p=0.74$ and I^2 was 0%. The RR in the fixed-effect model= 0.57 [95% CI=0.44,0.74; $p<0.0001$]. When only nRCTs related articles to BDP were analysed with removal of 2 PB articles, the heterogeneity was very low with $p=0.74$ and I^2 was 0% with RR in fixed-effect model= 0.49 [95% CI=0.33,0.72; $p=0.0002$]. **Conclusion:** With inclusion of mostly low risk of bias (RoB) articles and 1 moderate RoB article which were assessed through Cochrane risk assessment and Newcastle-Ottawa scale (NOS), the meta-analyses revealed that baricitinib significantly reduced mortality rate and disease progression in SARS-CoV-2 virus infected patients. [PROSPERO protocol registration number: CRD42021281556].

WHY INNOVATIONS ARE DRIVEN BY DISRUPTION – A PERSONAL NARRATIVE IN MEDICAL EDUCATION

Ganesh Ramachandran^{1*}

1. Head, School of Medicine, Faculty of Health and Medical Sciences, Taylor's University Malaysia

Email: Ganesh.Ramachandran@taylors.edu.my

Introduction: In March 2020 the onset of the COVID-19 pandemic disrupted the conduct of all spheres of activity. Delivery of medical education was not spared. **Methods:** The pandemic required us to convert rapidly from a traditional face to face delivery to online delivery almost overnight. Closures of hospitals required conversion of clinical bedside teaching to case-based teaching using mannequins and simulated patients delivered online. **Results:** The training of doctors has always been based on face-to-face encounters, be it in lecture theatres, laboratories, or hospitals. The gap in IT skills among academics and students together with gaps in equipment and a reliable internet connection were problems that needed to be addressed. Solutions were to use what was available to rapidly convert teaching and learning delivery while building capacity and developing faculty. Communication, reassurance, and feedback to reassure both staff and students was important to develop confidence in the system and drive it forward. **Conclusion:** Disruption drives innovation. Innovations need to be appropriately cost effective and add value to curriculum delivery, while taking into consideration faculty development and student readiness. Innovations are most effective when there is a human interphase.

CHALLENGES IN ROUTINE DIABETES MEDICATION THERAPY ADHERENCE CLINIC (DMTAC) SERVICES AT PRIMARY HEALTH CLINICS DURING COVID-19 PANDEMIC: ADDRESSING CONCERNS AND MAINTAINING SERVICES

***Tai Chia Woon¹, Fatimah Binti Azzaharah², Foo Jing Chuan³, Hazlina Binti Iurat⁴, Justine See Kai Ting⁵, Lai Siew Yen⁶, Lim Shu Min¹, Lim Sui Jing⁷, Nur Raihanah Binti A. Rahman⁸, Nurul Najihah Binti Azni⁹, Siti Aiyshah Binti Shahid¹⁰, Siti Khadijah Binti Zamri¹¹, Wan Mariana Binti Wan Osman¹², Yasmin Nabilah Binti Zakaria¹³, Yasodha A/P Govindasamy¹⁴**

1. Pharmacy Department, Mahmoodiah Health Clinic, Johor Bahru, Malaysia
2. Pharmacy Department, Ulu Tiram Health Clinic Johor Bahru, Malaysia
3. Pharmacy Department, Pasir Gudang Health Clinic Johor Bahru, Malaysia
4. Pharmacy Department, Taman University Health Clinic Johor Bahru, Malaysia
5. Pharmacy Department, Majidee Health Clinic Johor Bahru, Malaysia
6. Pharmacy Department, Bukit Indah Health Clinic Johor Bahru, Malaysia
7. Pharmacy Department, Masai Health Clinic Johor Bahru, Malaysia
8. Pharmacy Department, Larkin Health Clinic Johor Bahru, Malaysia
9. Pharmacy Department, Gelang Patah Health Clinic Johor Bahru, Malaysia
10. Pharmacy Department, Kempas Health Clinic Johor Bahru, Malaysia
11. Pharmacy Department, Taman Sri Orkid Health Clinic Johor Bahru, Malaysia
12. Pharmacy Department, Tampoi Health Clinic Johor Bahru, Malaysia
13. Pharmacy Department, Sultan Ismail Health Clinic Johor Bahru, Malaysia
14. Pharmacy Department, Tebrau Health Clinic Johor Bahru, Malaysia

Email: taichiawoon@yahoo.com.sg

Introduction: Diabetes is a chronic disease that requires continuous close monitoring from the primary care team. In Malaysia, diabetes medication therapy adherence clinic (DMTAC) is an ambulatory care service provided by trained DMTAC pharmacists to patients with type 2 diabetes mellitus (T2DM) that has proven to have positive impacts on glycaemic control. However, with physical distancing being of utmost importance during the pandemic, it has imposed significant challenges in providing effective and sustained DMTAC service. **Aim:** To evaluate the impact of the DMTAC services in improving patients' glycosylated haemoglobin A1c (HbA1c, %), lipid profiles, medication compliance (MyMAAT score) and patients' understanding on their medications (DFIT score) during COVID-19 pandemic, and to discuss the challenges faced by the pharmacists during the DMTAC services. **Methods:** This is a cross-sectional retrospective, multi-centre study of the impact of the DMTAC services at 14 governmental health clinics in Johor Bahru District during the COVID-19 pandemic. Patients enrolled in the DMTAC program from January to December 2020 were included. Baseline values of HbA1c, lipid profiles, MyMAAT and DFIT score were taken from patients' medical records for the first visit while the post-intervention values were the last records before December 2021. **Results:** A total of 331 patients were included in this study. Significant reduction of mean HbA1c ($1.01 \pm 2.23\%$) and low-density lipoprotein (LDL) level (-0.35mmol/L) were detected. The level of high-density lipoprotein (HDL) was found to decrease a little (-0.04mmol/L) yet significantly. Both medication compliance and patients' understanding of their medications were found to have improved significantly. Challenges such as impact of social distancing on the self-management of T2DM and shortage of staff were highlighted. **Conclusions:** DMTAC is still able to produce significant improvement in patients' HbA1c, LDL level, medication compliance and understanding of medications, despite the challenges encountered during the COVID-19 pandemic.

**THE EFFECT OF DEPRESSION, ANXIETY AND STRESS ON MENTAL WELL-BEING
AMONG YOUNG ADULTS DURING THE COVID-19 PANDEMIC IN MALAYSIA**

Sharvinder Raj Sandra Mohan^{1*}, Surianti Lajuma²

1. Faculty of Education and Liberal Studies, City University of Malaysia, Selangor, Malaysia.
2. Faculty of Education and Liberal Studies, City University of Malaysia, Selangor, Malaysia.

Email: sharvinsp@gmail.com

Introduction: The emergence of Coronavirus Disease 2019 (COVID-19) has been declared as an international health crisis and movement control disorder in most of the countries, including Malaysia. This has contributed to psychological distress among young adults. Psychological distress is quite common, during a pandemic but the demographic factors are unclear. **Aims:** The researcher analysed whether depression, anxiety, and stress have significant relationships with mental well-being. Also, the researcher analysed whether there is a significant difference in mental well-being based on gender. **Methods:** A sample population of 270 respondents who are from various states all over Malaysia, between ages 18 to 29 years, took part in the research. A set of questionnaires was created to collect the Depression Anxiety Stress Scale (DASS-21) and demographic backgrounds from the respondents. The mode of the research was an online questionnaire based on self-assessment via Google form. **Results:** The results indicated that there were significant relationships between depression, anxiety, and stress with mental well-being. However, there was no significant difference in mental well-being based on gender. **Conclusion:** Based on the results shown in the research, depression, anxiety and stress is common among young adults, and it affects their daily livelihood in many ways. With the pandemic gradually reaching its end point, proper mental well-being could be maintained by taking necessary measurements such as consulting a mental-health professional.

OBSERVATIONAL CROSS-SECTIONAL STUDY ON REPORTS OF COVID-19 VACCINE SIDE EFFECTS VIA AN NGO ONLINE SURVEY IN MALAYSIA

Nurhasanah M.¹, Siti Jamilah M.H.A²., Nurulhuda M.Z¹., Adlina S.³

1. Persatuan Pengguna Islam Malaysia (PPIM)
2. Swinburne University of Technology Sarawak
3. Malaysian Association for the Advancement of Functional and Interdisciplinary Medicine (MAAFIM)

Email: adlinasurvey@gmail.com

Introduction: The objective of this study is to describe the occurrence of Adverse Events Following COVID-19 Immunisation (AEFCI) among the Malaysian population who made reports via the online data collection portal and to identify the relationship to sociodemographic data as well as vaccine brands. **Methods:** This cross-sectional study used responses (convenience sampling method) to the online Zoho Form platform for the period from July to December 2021. The questionnaire was in Malay and the link ‘bit.ly/Laporankesansampingan’ was distributed using social media platforms like Facebook, WhatsApp, and Telegram. The questionnaire design was partly based on the Vaccine Adverse Event Reporting System (VAERS) with modifications tailored to local acceptance. **Result:** A total of 2295 respondents reported adverse events. Only 31% had reported the AEFCI via MySejahtera and 6% to NPRA. AEFCI appeared after the first dose for 58.8%, 40.9% after the second dose and 0.17% after the booster dose. 78% were between 19 to 48 years of age. 91% of AEFCI occurred less than 2 weeks after vaccination administration with 45% within 24 hours, 22% within 2-3 days, 14% less than one week and 8% less than 2 weeks. 43% were severe events, 45% moderate and 13% mild. As for continuity of suffering, 91, 90, and 85% of the respondents who had received Pfizer, Sinovac and AstraZeneca respectively were still continuously affected after the emergence of COVID-19 AEFCI. Respondents who sought medical treatment for the AEFCI reported that only 24% of medical doctors acknowledged the possibility of AEFCI, whereas 30% disagreed and 46% remained silent. **Conclusion:** This study found that many adverse events following vaccination are not reported to the government channels and that doctors seemed reluctant to diagnose the condition as an adverse event following vaccination. More research needs to be conducted within communities to assist in giving clarity to AEFCI and find solutions to reduce the sufferings of people who suffer from AEFCI.

RADIOGRAPHIC ASSESSMENTS OF ENDODONTIC DISEASE PROGRESSION- A RETROSPECTIVE STUDY DURING COVID-19 PANDEMIC

Nurul Ain Ramlan^{1*}, Fatimah Munirah Mohamad Mahyuddin², Muhammad ‘Ammar bin Abd Hakim²,
Nor Hidayah binti Reduwan³, Muhammad Hilmi Zainal Ariffin⁴

1. Centre of Comprehensive Care Dentistry Study, Faculty of Dentistry, Universiti Teknologi MARA, Sg. Buloh Campus, Selangor, Malaysia. Email: ainramlan@uitm.edu.my
2. Faculty of Dentistry, Universiti Teknologi MARA, Sg. Buloh Campus, Selangor, Malaysia.
3. Centreter of Oral and Maxillofacial Diagnostics and Medicine Studies, Faculty of Dentistry, Universiti Teknologi MARA, Sg. Buloh Campus, Selangor, Malaysia.
4. Centre of Periodontology Study, Faculty of Dentistry, Universiti Teknologi MARA, Sg. Buloh Campus, Selangor, Malaysia.

Introduction: Endodontic disease especially in asymptomatic apical periodontitis often develops without subjective symptoms and is detected mostly through radiographic changes. **Aims:** Progression of endodontic disease in adults with or without initial endodontic treatment was evaluated through intraoral periapical radiographic changes between twelve to fifteen months in patients attending UiTM Dental Centre during the movement control order (MCO). **Methods:** This retrospective study utilised radiographic images of thirty single rooted teeth in patients diagnosed with apical periodontitis treated by final year undergraduate students at the Faculty of Dentistry UiTM during the MCO 1.0 phase. Patients were divided into two groups according to the status of initial endodontic treatment. Group A consisted of patients who received no initial treatment while Group B consisted of patients who received pulp extirpation as the initial therapy. Post-MCO periapical lesion progression was compared with pre-MCO periapical lesion using the existing radiographic images between the two groups. The corono-apico and mesiodistal diameter of the periapical lesion were measured and categorised using the Periapical Index (PAI) by two calibrated examiners. **Results:** Paired t-test revealed a significant difference in corono-apico diameter ($p < 0.05$) and mesiodistal diameter ($p < 0.05$) between pulp extirpated and non-pulp extirpated group. Both groups had no significant difference in Periapical Index (PAI) score ($p > 0.05$). **Conclusion:** This study showed that the radiographic sign of endodontic lesion/disease progression were seen more in patients who did not undergo initial endodontic treatment as compared to and patients who started the initial endodontic treatment.

PRELIMINARY REPORT ON MUSCULOSKELETAL CORTICOSTEROID INJECTION DURING COVID-19 PANDEMIC: EVIDENCE FROM UNIVERSITY MALAYA MEDICAL CENTRE

Mohamad Azwan Aziz (MBBS)^{1,2}, Azmi Mohamed Nahar (MsportsMed)^{1,2}

1. Sports Medicine Unit, Faculty of Medicine, University of Malaya, 59100 Kuala Lumpur, Malaysia.
Email: azwan.aziz@ummc.edu.my
2. Sports Medicine Department, University Malaya Medical Centre, 59100 Kuala Lumpur, Malaysia.

Introduction: Robust international musculoskeletal bodies recommended against musculoskeletal steroid injection during COVID-19 pandemic, fearing the immunosuppressive effects of the steroid could worsen COVID-19 infection. **Methods:** This is a retrospective study from the 1st of January 2020 until the 28th of February 2021, on those who visited the sports medicine clinic in University Malaya Medical Centre and received musculoskeletal steroid injections. The list of patient's names with identification numbers were then sent to the national Crisis Preparedness and Response Center (CPRC) and positive cases of COVID-19 from the list including date of positive test were returned by the national CPRC team. Only patients who were positive for COVID-19 within 3 months after the corticosteroid injection were considered. **Results:** Of the 502 steroid injections, 89% (n= 443) received a single injection in one day, 10% (n=54) received 2 sites of steroid injections in one day and 1% (n=2) received 3 sites of steroid injections in one day. Out of 502 injections, 18% (n=97) received just steroid, 80.5% (n=396) received steroid mixed with local anaesthetic (lignocaine or bupivacaine), 1% (n=6) received steroid mixed with hyaluronic acid, 0.5% (n=3) received steroid mixed with prolotherapy. Triamcinolone was used in all procedures (100%), ranging from a total of 10 mg – 120 mg per patient per day. Using Fisher's exact test, there was no statistically significant difference between the steroid study and control group. **Conclusion:** We recommend careful risk-benefit analysis and shared decision making with patients prior to the procedure, hoping to improve management of musculoskeletal pain during COVID-19 pandemic.

**BOOSTING COVID-19 IMMUNISATION THROUGH MOBILE VACCINATION:
COMPARISON OF EXPERIENCES AT PARIT SULONG AND PUNCAK ALAM**

Mawaddah Azman¹, Hardip Singh Gendeh¹, Mohd Shawal Firdaus Mohamad², Wan Najwa Wan Mohd Zohdi³, Julina Md Noor⁴, Razman Jarmin⁵, Hanafiah Harunarashid⁵

1. Department of Otorhinolaryngology – Head and Neck Surgery, Universiti Kebangsaan Malaysia Medical Centre, Faculty of Medicine, Jalan Yaacob Latiff, Cheras 56000 Kuala Lumpur, Malaysia.
2. Department of Oral and Maxillofacial Surgery, Universiti Teknologi MARA Cawangan Puncak Alam, Puncak Alam, 42300 Kuala Selangor, Selangor, Malaysia.
3. Department of Rehabilitation Medicine, Faculty of Medicine, Universiti Teknologi MARA, Sungai Buloh Campus, 47000 Sungai Buloh, Selangor, Malaysia.
4. Department of Emergency Medicine, Faculty of Medicine, Universiti Teknologi MARA, Sungai Buloh Campus, 47000 Sungai Buloh, Selangor, Malaysia.
5. Department of Surgery, Universiti Kebangsaan Malaysia Medical Centre, Faculty of Medicine, Jalan Yaacob Latiff, Cheras 56000 Kuala Lumpur, Malaysia.

Email: hardip88@gmail.com

Introduction: Malaysia is a multiethnic country with diverse geographical distribution, ranging from urban, suburban, and rural areas. The COVID-19 national immunisation program in Malaysia calls for a specific strategy to enhance vaccine roll-out. The objective is to compare vaccination setup and demographic characteristics in Parit Sulong, Johor and Puncak Alam, Selangor and suggest strategies to improve vaccination rates in rural areas. **Methods:** A retrospective study was conducted at two vaccination centres in Parit Sulong and Puncak Alam. Vaccination setup was observed and documented. Registration data from 150 and 1420 consenting adults receiving their first dose of COVID-19 vaccination on the 25th and 26th June 2021 from Parit Sulong and Puncak Alam, respectively, were included. **Results:** The vaccination centre at Parit Sulong utilised three methods: 1) satellite vaccination camp; 2) mobile outreach camp; and 3) home-to-home visit to improve vaccine reach in a rural district. The vaccination centre at Puncak Alam utilised two methods: 1) vaccination in a large hall; and 2) drive-through vaccination to enhance daily vaccine administration in an urban district. The vaccine recipients at Parit Sulong were significantly older compared to Puncak Alam (70.39 SD 11.39 vs 51.52 SD 11.02 years respectively; $p < 0.0001$). A significantly higher proportion of vaccine recipients at Parit Sulong were unable to read or write in their mother tongue (41.33%; $p < 0.0001$), did not own a mobile phone (53.33%; $p < 0.0001$) and did not have access to MySejahtera mobile application (84.57%; $p < 0.0001$). **Conclusion:** The socio-demographic differences between the urban and rural districts in Malaysia calls for a different methodological approach for vaccine roll-out. The mobile vaccination model allows for greater vaccination reach and administration, targeting rural residents with transportation and technology restrictions. The drive-through vaccination model improved the vaccine uptake among young families with children, heavily pregnant ladies and elderly with physical limitations living in urban areas.

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“HIT BY THE STORM, BUT ARE WE IN THE DIFFERENT BOAT? BEYOND PSYCHOLOGICAL FIRST AID (PFA): THE EXPERIENCES AND PERSPECTIVES OF THE MALAYSIA PSYCHIATRY SERVICE”

Nurul Nadia binti Ismail

Head of Department of Psychiatry, Hospital Kulim, Kedah, Ministry of Malaysia (MOH)

Email: nur_aidan@yahoo.com

Introduction: When Malaysia had its first lockdown on the 18th of March 2020, healthcare professionals (HCPs) at all levels were on guard preparing for what could be coming. This unprecedented event has changed some of the daily clinical practices including mobilisation of thousands of healthcare workers to various COVID-19 fields. Studies have shown that during a pandemic there would be an increased rate in psychological distress among HCPs, including heightened stress, depression, anxiety and post-traumatic stress symptoms or disorders. Intervention such psychological first aid (PFA) has proven to be an effective mediator for psychological distress. **Methods:** With great leadership in the psychiatry services, a coordinator from each of 63 psychiatry departments was selected to coordinate the PFA activities under the mental health and psychosocial support groups (MHPSS). Meetings were held to share experiences and challenges between the coordinators with the aim to ensure an efficient delivery of PFA. **Results:** A few resolutions were identified, such as collaboration between NGOs, private companies, and other government agencies, to act as the connecting bridge between staff and the administration level, to be proactive by conducting regular PFA sessions, to further intensify the on-going mental health promotion and screening, including fighting the stigma among HCPs. Furthermore, some of the PFA teams have become more creative by creating YouTube videos on relaxation techniques, to suit our local population, producing posters and infographics to be widely distributed, and creating social media groups to ensure regular communications with the clients including talks on stress management. Data on the PFA sessions were also collected and reported for each month to ensure continuous improvement for future usage. **Conclusion:** The most important lesson we have discovered is that our HCPs are always ready to contribute, to sacrifice and to give their best within their capacity, which helps them to become resilient.

CRISPR AS A NOVEL TECHNIQUE FOR COVID-19 DIAGNOSIS: A REVIEW

Ali Adil Saleem^{1*}, Aedah Fadhil Annooz², Arkan Hammoodi Hasan Kabla³

1. Medical laboratory techniques, Al-Hakim hospital, Najaf, Iraq, 54001.
Email: aliadil41994@gmail.com
2. Faculty of Medicine, University of Kufa, Najaf, Iraq, 54001
3. National Advanced IPv6 Centre, Universiti Sains Malaysia, Penang, Malaysia, 11800

Introduction: COVID-19 is a human coronavirus disease that was first detected in December 2019. COVID-19 occurs as a result of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) infection. SARS-CoV-2 is considered the seventh strain of Coronaviruses that targets the human respiratory system. To this moment, COVID-19 as a pandemic is still a critical case that provokes concern around the world. In January 2022, there were over 300 million infections and over 5 million fatalities from COVID-19. Thus, as a countermeasure against this rapid spread, there is a vital need for effective and low-cost diagnosis methods in order to control the danger of this pandemic. **Method:** CRISPR technology has proved its efficiency in detecting COVID-19 quickly and accurately. Therefore, many researchers and developers have paid attention to this technology regarding its simplicity, specificity, and high-sensitivity in terms of nucleic analysis of viruses. **Aims:** This paper reviews the state-of-the-art of developing the CRISPR platforms for the purpose of COVID-19 diagnosis and treatment. **Conclusion:** This paper discusses the limitations and challenges of CRISPR in terms of molecular detection applications.

EVALUATING ONLINE PROBLEM-BASED LEARNING AS A WAY FORWARD POST COVID-19 PANDEMIC

An Jie Lye*, Che Rafidah Aziz, Chan Choong Foong, Vinod Pallath, Wei-Han Hong, Jessica Grace Cockburn, Jamuna Vadivelu

Medical Education and Research Development Unit (MERDU), Faculty of Medicine, Universiti Malaya, Malaysia.

Email: anjielye@um.edu.my

Introduction: The outbreak of the COVID-19 pandemic left medical schools with no choice but to move physical teaching and learning to online platforms. Following the changes, problem-based learning (PBL) sessions were conducted online to facilitate students' learning. Although online PBL seemed to be an appropriate solution during the pandemic, it remains unknown whether this teaching and learning mode shall be continued after the pandemic. **Aims:** To investigate the acceptance of online PBL among medical students by comparing their PBL learning experiences at the commencement of online PBL and after one year of the implementation. The findings provided some evidence for medical schools before making the next decision. **Methods:** This study was carried out at the Faculty of Medicine, Universiti Malaya. A 12-item questionnaire with a 5-point Likert scale was developed and validated among pre-clinical medical students. Based on the principal component analysis and internal consistency test, the questionnaire was valid and reliable. The self-administered questionnaire was distributed with students using Google Form twice (1st time = the commencement of online PBL; 2nd time = after a year of the implementation of online PBL). Students were given two weeks to complete and submit their responses. Data were analysed by using the Mann-Whitney U test to compare the online PBL learning experiences of medical students at two different points in time. **Results:** A total of 270 students (response rate = 80%) completed the questionnaire. Based on the findings, online PBL was perceived to be effective. Students' online PBL experiences improved after a year of participating in online PBL sessions. They were able to receive and understand the information from online PBL sessions. Despite the favourable responses, students also expressed their concerns on passing clinical examinations and the mastery of content. **Conclusion:** Online PBL is an acceptable solution during the pandemic, medical schools might consider continuing its implementation post-pandemic, subject to further research.

THE IMPLEMENTATION OF PROBLEM-BASED LEARNING (PBL) GROUP PEER ASSESSMENT DURING THE COVID-19 PANDEMIC

Che Rafidah Aziz*, An Jie Lye, Chan Choong Foong, Jamuna Vadivelu

Medical Education and Research Development Unit (MERDU), Faculty of Medicine, Universiti Malaya, Lembah Pantai, 50603 Kuala Lumpur, Malaysia.

Email: cherafidah@um.edu.my

Introduction: Medical education was tremendously affected following the outbreak of the COVID-19 pandemic. As a result of the lockdown restriction, the Problem-Based Learning (PBL) sessions were migrated to the online platform. However, it is difficult to monitor the participation of medical students in online PBL as compared to physical PBL sessions. An example of the uncertainties was students did not turn on the camera and they were being silent. Therefore, the Group Peer Assessment was implemented to monitor the participation of medical students in online PBL as we believed students can give better feedback to their peers when they work together in groups. **Methods:** This study was conducted at the Universiti Malaya, a public-funded university in Malaysia. Year 1 medical students participated in the PBL Group Peer Assessment. The assessment was carried out on an anonymous feedback basis. Data were analysed to identify the best and poorly rated PBL group peers. The best PBL group peers received positive reinforcements (e.g., customised bookmarks) whereas PBL group peers who were poorly rated joined remediation. In the remediation students reflected and identified their weaknesses to improve in the future PBL session. **Results:** In the first assessment, sixteen students were identified as best PBL group peers and eleven students were rated below the expectations. They were rated poorly in terms of participation and preparation. In the second assessment, the number of best PBL group peers was increased to twenty-two students and the number of under-expectations peers was decreased to four students. The comparison results showed an improvement after the remediation. **Conclusion:** Overall, the PBL Group Peer Assessment was an effective approach to monitor students during the online learning process.

NORMALIZING NEW NORM OF TEACHING AND LEARNING IN UNIVERSITY OF MALAYA MEDICAL PROGRAMME (UMMP)

Nur Shahidah Mardhiyyah Alwi*, Nurashikin Moh Dat, Asma Aziz, Nurul Atira Khairul Anhar Holder, Wei-Han Hong, Chan Choong Foong, Jamunarani Vadivelu

Medical Education & Research Development Unit (MERDU), Faculty of Medicine, University Malaya, Kuala Lumpur.

Email: shahida0054@um.edu.my

Introduction: The Covid-19 outbreak has changed our education as University Malaya (UM) has instructed and prepared new alternatives and policies in online teaching and learning (T&L) for students. The main purpose of introducing this alternative is to ensure the safety of all stakeholders. The alternatives of online learning used in UM included Microsoft Team (MST) and Spectrum. **Methods:** Synchronous and Asynchronous methods have been implemented to ensure the continuity in teaching and learning for the students. Asynchronous T&L occurred when the academic staff prepared a voiced-over PPT slides prior to the lecture session. Students then would listen to the presentation before coming to the live lecture session. Meanwhile, synchronous T&L happens when both academic staff and students are present online to discuss on important points of the lesson and question and answer session. All sessions were recorded for students' learning. **Results:** Among the challenges faced during the implementation process were adaptation and readiness of students, academic staff and administrators to the system, internet connectivity being an inevitable issue, infrastructure limitation, technological use and well-being of students, academic staff and administrators. We believe that the integration of information technology in medical programmes will be further accelerated by the university and that online learning will eventually become a successful transition by time. Online learning platforms now seem convenient for both academic staff and students as it can be done remotely. **Conclusion:** Covid-19 pandemic has left massive impacts on many educational institutions in restructuring their T&L system for continuous learning. This is even more so for medical programmes and other programmes which require face-to-face teachings for practical skills. Our institution has invested in a technological platform which we believe has aided us in implementing an effective way of T&L. This is imperative in order to produce competent medical graduates.

**AM I IN A VIRTUAL MEDICAL SCHOOL? - FIRST YEAR UNDERGRADUATE
MEDICAL STUDENTS REFLECTING ON ONLINE EDUCATION DURING THE COVID-
19 PANDEMIC**

Asma Aziz*, Nurashikin Moh Dat, Nur Shahidah Mardiyah Alwi, Nurul Atira Khairul Anuar Holder,
Foong Chan Choong, Hong Wei-Han, Jamunarani Vadivelu

Medical Education Research and Development Unit (MERDU), Faculty of Medicine, Universiti Malaya,
Kuala Lumpur, Malaysia.

Email: asma89@um.edu.my

Introduction: Universiti Malaya implemented full virtual teaching and learning activities for Year 1 students to avoid deferment in their studies. Subsequently, Year 1 students had no physical orientation week and did not have the opportunity to experience study life on campus. Students only met their classmates online and were unable to create physical bonding among themselves. **Methods:** At the end of Year 1, students performed a written reflection on their learning experience, guided by Kolb's reflective cycle (i.e., experience, reflect, conceptualise, apply). They described either a good or bad experience, expressed feelings, indicated lessons learnt, and suggested implications to begin Year 2 with. **Results:** The analysis showed that students were juggling to balance their studies and life at the same time. Whereas some of them were grateful for the opportunity to enjoy solitudes in the comfort of being at their own home. The most common feedback was they felt unmotivated and lost focus as a possible result of being away from campus. As online teaching and learning continued, some of them drifted in anxiety and FOMO (Fear of missing out). Hence, these students were adapting a complete virtual campus as Year 1 medical students. Meanwhile, students were not exposed to hands-on physical examination, and hence they might have low confidence level. On the other hand, these students had more screen time as they needed to revise all the teaching materials using their electronic devices. Over-screen time might adversely affect the students' behaviours and their academic understanding, and it could result in poor academic performance. Students might also experience negative psychological outcomes (e.g., lack of motivation, anxiety, stress, depressive symptoms). **Conclusion:** The plan is for Year 1 students to obtain an online COVID Preparedness Certificate (CPC) before they are allowed to come back to the physical campus in continuing their medical studies.

MULTISYSTEM INFLAMMATORY SYNDROME (MIS-C) IN AN ADOLESCENT MALAYSIAN: RECOVERY OR START OF THE BATTLE OF COVID-19?

Ng Rong Xiang^{1,2}, Faiz Mashood^{1*}, Reena Rajasuriar^{1,2}, Ong Hang Cheng^{1,2}, Adeeba Kamarulzaman^{1,2}

1. Section of Infectious Diseases, Department of Internal Medicine, University Malaya Medical Centre, Kuala Lumpur, Malaysia. Email: faiz.mashood@ummc.edu.my
2. Centre of Excellence for Research in AIDS, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia.

Introduction: Multisystem Inflammatory Syndrome in children (MIS-C) is an uncommon complication of SARS-CoV-2 infection in paediatric populations that presents with a wide spectrum of illness. It can present up to 4 weeks after onset of acute COVID-19 with extrapulmonary multiorgan dysfunction because of immune dysregulation, hyperinflammation and endothelial injury. **Case:** An 18-year-old man with asymptomatic COVID-19 infection presented with high grade fever, profuse diarrhoea, abdominal pain, hallucination, peeling of skin on the pulp of fingers, myocarditis, circulatory shock, pericardial effusion, and acute kidney injury at second week following diagnosis of COVID-19. At presentation his white cell counts was $23.7 \times 10^9/L$. Inflammatory markers including C-reactive protein (303 mg/L), serum ferritin (2077 ug/L), procalcitonin (4.69 ng/ml) were significantly raised. Interleukin (IL-6) (16pg/ml), tumour necrosis factor (TNF- α) (21.3pg/ml) showed a discordance with IL-1 level (0.19pg/ml). The cellular marker for CD4 T-cell activation and CD8 T-cell activation were 7.6pg/ml and 8.2 pg/ml respectively. The naso-oro-pharyngeal swab was negative for SARS-COV-2 virus but positive for COVID serology (IgM and IgG) on this admission. All cultures were sterile and negative for bacterial and viral serology tests. He was treated with methylprednisolone on day six of admission and responded well. **Discussion:** MIS-C is associated with a hyper-inflammatory state resulting in myocarditis and circulatory shock, probable COVID-19 related vasculitic process or diffuse microthrombi to the brain that explained his hallucination, or inflammation triggering T cells to breach the blood-brain barrier causing intramyelinic oedema. Of note, there is a discordance between IL-6 and IL-1 Beta levels which differentiate from other inflammatory conditions. Nevertheless, our patient responded with glucocorticoid with a good outcome and resolution of symptoms. **Conclusion:** This case illustrates the life-threatening nature of MIS-C with rapid progression to multisystem organ failure which needs early recognition and institution of treatment. This disease entity can be altered by encouraging vaccination in the paediatric population.

OUTCOME ORIENTED E-LEARNING ENHANCEMENT BASED ON STUDENT FEEDBACK AND ITS EFFECT ON STUDENT EXPERIENCE IN ONLINE LEARNING

Nilesh Kumar Mitra^{1*}, Hasnain Zafar Baloch²

1. Director, Learning resources, International Medical University, Bukit Jalil, 57000 Kuala Lumpur. Email: NileshKumar@imu.edu.my
2. Head, e-Learning department, International Medical University, Bukit Jalil, 57000 Kuala Lumpur

Introduction: Experience during pandemic has indicated that student feedback has an important role in the decision making process in improving the online administration of teaching and learning. **Aims:** The objective of the study was to evaluate the effect of outcome-oriented e-Learning enhancement based on the student feedback and observe its effect on student experience in online learning. **Methods:** A 25-item questionnaire was constructed based on a pilot survey done in the beginning of 2020. 55% of total students participated in online survey done in April 2020. Based on survey result, e-learning and IT teams increased capacity of simultaneous access to online portal, organized multiple online workshops on use of Microsoft Teams and Zoom, chunking of online lectures and use of online portal for online assessment. Another set of surveys was done in October-November 2020 to analyze students' feedback on online learning. **Results:** About 18% of students reported weak Wi-Fi connection at home. 92% of students accessed the portal every week. Challenges in accessing online study materials were difficulty in finding the links (38%), difficulty in finding relevant material (24%) and unstable internet connection (57%). 65% of students agreed to continue with online learning once the MCO was lifted. Second survey conducted during the later part of 2020 showed that 80% of students agreed that online portal has been improved and useful for study. A similar percentage of students agreed that improvement done by the e-Learning department was able to improve the online portal experience. Navigating for the study material and downloading it have become easy (68%) and voice-over lectures, lab-videos and skills-videos are easy to navigate (72%). **Conclusion:** The faculty, e-Learning and library team should work together, analyze students' feedback on online learning and expedite corrective measures. Faculty development is the key process to improve student experience in online learning.

CoSMoS, A COVID-19 HOME MONITORING SYSTEM BASED IN A TERTIARY CARE HOSPITAL IN MALAYSIA

Michelle Wong Pei Wen¹, Wong Pui Li², Adina Binti Abdullah³

1. Medical Department, Hospital Kuala Lumpur, Kuala Lumpur, Malaysia. Email: michellewong.pw@gmail.com
2. Department of Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia.
3. Department of Primary Care Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia.

Introduction: The third COVID-19 pandemic wave in Malaysia began in September 2020 and peaked in January 2021, reaching up to 4,000 cases per day. Epidemiological reports and studies showed that most COVID-19 patients in this wave develop mild symptoms and do not require inpatient admission. This led to the establishment of the COVID Assessment Centers (CACs) by the Ministry of Health. at University Malaya Medical Center (UMMC), the COVID-19 Task Force decided to use the COVID-19 Symptom Monitoring System (CoSMoS) to monitor University Malaya staff and staff dependents at home. **Aims:** To evaluate effectiveness of CoSMoS for COVID-19 home monitoring and its impact on inpatient admissions. **Methods:** This is a retrospective cohort analysis of data obtained during home monitoring of UMMC staffs and staff dependents from January to August 2021. **Results:** The CoSMoS clinical team triaged 1208 staff and staff dependents who tested positive for COVID-19 using the RT-PcR or RTK-Antigen tests. 63.9% (n=773) patients fulfilled the criteria for home monitoring. While patients were being monitored at home, 12.2% (n=94) patients were escalated to inpatient care, 13.1% (n=11/84) patients requiring oxygen supplementation upon arrival to UMMC. There was no mortality recorded amongst patients monitored by CoSMoS. **Conclusion:** Home monitoring of COVID-19 patients using the CoSMoS system was safe, efficient, and led to a low rate of hospital admission. By having a dedicated clinical team which included the Infectious Disease team at the hospital, rapid escalation of care for home monitored patients who deteriorated was performed in a timely manner. In the future, home monitoring should be applied to more medical conditions to reduce inpatient care.

STUDENT EVALUATIONS IN THE ONGOING DEVELOPMENT OF A COVID-SOP COMPLIANT VIRTUAL WRITTEN SKILLS PROGRAMME.

Kathryn Amelia Bell*

Clinical Teaching Fellow, Newcastle University Medicine Malaysia (NUMed),
Kathryn.Bell@newcastle.edu.my

Introduction: Written skill acquisition is a fundamental outcome of undergraduate medical studies. Due to Covid related restrictions imposed upon educational institutions, written skills teaching became reliant on virtual sessions. Current literature comments on variable success of virtual programmes substituting face-to-face skills teaching. In response to this, we aim to develop a high quality (as per the Learning Object Review Instrument, LORI), virtual written skills teaching programme (including prescribing, requesting investigations, interpretation of investigation results, and documentation) with potential for transnational, cross-campus utility. This Microsoft 365 based programme features a platform to submit responses to practise cases, review of responses which inform a virtual lecture, and an interactive Q&A. **Aims:** To evaluate a virtual written skills programme for medical students, via a series of student surveys, to inform further development of the programme. **Methods:** The programme was introduced to a cohort of medical students undertaking an established module at a Malaysian medical school (Cycle 1). Evaluation data was collected via a mixed method of data collection, where quantitative Likert scales were embedded within a free text answer survey. Results and themes informed further development of the programme, which was then introduced to a wider cohort of clinical medical students (Cycle 2). Evaluation data of the same method was then collected and analysed. **Results:** Cycle 1 evaluations revealed all students felt more confident about their exam, all students enjoyed the session, and most students (90%) felt that this format addressed their needs. All students wanted more sessions in this format. At Cycle 2, themes identified included satisfaction regarding usability of the programme, and appreciation of feedback informing learning. **Conclusion:** This is a programme which supports development of written skills in a virtual environment, worthy of further development and implementation.

PREVALENCE AND FACTORS ASSOCIATED WITH PHYSICAL VIOLENCE AMONG HEALTHCARE WORKERS IN MINISTRY OF HEALTH HOSPITALS AND MEDICAL INSTITUTIONS

Mohd Rizal Bin Abdul Manaf¹, Nurul Shahida Binti Mohd Saffe¹, Azlihanis Binti Abdul Hadi²

1. Department of Community Health, Faculty of Medicine, Pusat Perubatan Universiti Kebangsaan Malaysia. Email: nurulshahida21@gmail.com
2. Medical Development Division, Ministry of Health.

Introduction: Workplace violence, especially in health sectors, is a safety and health hazard that affects workers, organisations, and patient management. Among workplace violences, physical violence is the most severe form, causing injury, property damage and even health consequences. Hence, this study aims to determine the prevalence of physical workplace violence and its associated factors among healthcare workers in hospitals and medical institutions of MOH. **Methodology:** This study is a cross-sectional study, analysing secondary data from a database established via notification of workplace violence from hospitals and medical institutions from 2018 to 2020. **Results:** From 1257 cases notified, the prevalence of physical violence is 31%, accounting for 390 cases. Multiple logistic regression models were constructed to discover the determinants of physical workplace violence, which showed males had an odds of 2.190 (95%CI: 1.620-2.961) compared to females, paramedics, dan security guards having odds of 2.243 (95%SK: 1.633-3.082) and 6.519 (95%CI: 2.988-14.225) respectively compared to doctors for physical workplace violence. Patient as an aggressor having odds of 2.154 (95%CI: 1.035-4.483) compared to a colleague in physical workplace violence. As for incidents of violence, ward, inside and outside the buildings having odds of 2.075 (95%CI; 1.380-3.119), 3.106 (95%CI: 1.552-6.216) and 3.405 (95%CI: 1.600-2.244) respectively for physical workplace violence compared to counter violence. Working in the evening shift revealed an odds of 1.419 (95%CI: 1.029-1.958) compared to morning shift and aggressor-related cause resulted in odds of 2.886 (95%CI: 1.975-4.218) compared to environmental factors are among the significant predictors for physical workplace violence in hospitals and medical institutions. **Conclusion:** The findings of this study allow prevention strategies to be focused on these factors and applied to manage physical violence in hospitals and medical institutions.

CLINICAL CHARACTERISTICS OF COVID-19 BETWEEN ICU AND NON-ICU PATIENTS

Tuan Muhd Syukri^{1*}, Allim Khairuddin¹, Muhammad Syafiek Mohd Razali¹, M Ridhwan Abd Razak³, Zahiah Abdul Aziz³, Juita Hassan¹, Muhammad Amin Ibrahim²

1. Department of Cardiovascular and Thoracic Surgery, Faculty of Medicine, University Teknologi MARA, Sg. Buloh Campus, Selangor, Malaysia. Email: tmsyukri@uitm.edu.my
2. Respiratory and Sleep Medicine Unit, Department of Internal Medicine, Faculty of Medicine, Universiti Teknologi MARA, Sg. Buloh Campus, Selangor, Malaysia
3. Department of Anaesthesiology & Intensive Care, Faculty of Medicine, University Teknologi MARA, Sg. Buloh Campus, Selangor, Malaysia

Introduction: During the peak of the greater Klang Valley COVID-19 crisis between May and September 2021, Hospital UiTM Sg. Buloh (HUiTMSB) was converted to a full COVID-19 hospital. We described our experience in managing active COVID-19 patients and subsequent follow-ups. **Aim:** To compare clinical characteristics of COVID-19 patients between ICU and non-ICU. **Methodology:** Patient medical clinical notes and investigations were reviewed during the hospital admission and subsequent follow-up. **Result:** A total of 215 COVID-19 patients were admitted to HUiTMSB between May and September 2021; 81 patients (38%) required ICU admission, and 134 patients (62%) required only ward admission. Mean age was 53 years old, male 61%, mean day of illness at presentation was 9 days, and mean duration of hospital admission was 10 days. Fully and partially vaccinated patients were less likely to be admitted to ICU, OR 0.59 (0.29-1.19). ICU patients were more likely to be female Adj OR 1.99 (1.11-3.56), diabetic Adj OR 1.96 (1.04-3.68), have more extended hospital stay (17 vs. 6 days), and higher mortality OR 5.50 (2.64-11.34). In terms of laboratory investigations 24 hours prior to oxygen requirement, those requiring ICU admissions had higher creatinine (167 vs. 107 mmol/L), CRP (115 vs. 69 ug/L), and ALT (80 vs. 53 mmol/L), as well as lower PF ratio (148 vs. 210). Cardiac arrhythmias and secondary infection were more likely in ICU patients, Adj OR 16.44 (1.56-172.81) and 12.05 (5.44-26.69), respectively. Pneumothorax, pneumomediastinum, subcutaneous emphysema, and acute cor-pulmonale were observed only in ICU patients. Mortality was recorded in 43 cases (20%). Out of 172 COVID-19 survivors, 83 patients (48%) who attended the 3-month follow-up revealed no difference in symptoms, 6-minute-walk-tests, and spirometry between ICU and non-ICU patients. **Conclusion:** ICU COVID-19 patients have poorer outcomes during hospital admission but similar recovery with non-ICU patients at 3-month follow-up.

**TRANS-RESVERATROL ATTENUATES COLLAGEN DEPOSITION IN
DEXAMETHASONE-TREATED HUMAN TRABECULAR MESHWORK CELLS**

Amy Suzana Abu Bakar^{1,2*}, Norhafiza Razali^{1,2}, Renu Agarwal³, Igor Iezhitsa^{3,4}

1. Department of Pharmacology, Faculty of Medicine, Universiti Teknologi MARA (UiTM), Sungai Buloh Campus, 47000 Sungai Buloh, Selangor, Malaysia. Email: amysuzanaaa2611@gmail.com
2. Institute of Medical Molecular Biotechnology (IMMB), Universiti Teknologi MARA (UiTM), Sungai Buloh Campus, 47000 Sungai Buloh, Selangor, Malaysia.
3. School of Medicine, International Medical University (IMU), Bukit Jalil, 57000 Kuala Lumpur, Malaysia.
4. Department of Pharmacology and Bioinformatics, Volgograd State Medical University, Volgograd, Russian Federation Pavshikh Bortsov sq. 1, 400131 Volgograd, Russian Federation.

Introduction: Trabecular meshwork (TM) plays an important role in maintaining intraocular pressure (IOP) homeostasis by regulating aqueous humour drainage. In primary open angle glaucoma, ocular hypertension (elevated IOP) primarily occurs due to increase in outflow resistance resulting from TM tissue remodelling which involves increased deposition of extracellular matrix (ECM) within the TM pathway that blocks the outflow. *Trans*-resveratrol (TR), a polyphenolic compound has been shown to counteract steroid-induced increase in IOP and decrease in the ECM proteolytic enzyme, the matrix metalloproteinases. The effects of TR on the deposition of ECM components by TM however, remain unclear. Therefore, this study investigated whether TR is able to attenuate collagen expression, one of the main components of ECM in the TM induced by dexamethasone on primary human trabecular meshwork cells (HTMCs). **Methods:** Primary HTMCs were treated with 100 nM dexamethasone (Dexa) with or without 12.5 μ M TR. The culture media were collected after 3 and 7 days of incubation for gene and protein analysis using real-time polymerase chain reaction (RT-qPCR) and ELISA respectively. **Results:** The gene and protein expressions for collagen type I (COLI), collagen type III (COLIII) and collagen type IV (COLIV) in Dexa only group were significantly upregulated compared to the other groups. Cells co-treated with Dexa and TR showed significant reduction of collagen type I α 1 chain (COL1A1) and collagen type IV α 2 chain (COLIV1A2) genes, and significant reduction in the COLI, COLIII and COLIV proteins. **Conclusion:** Treatment with 12.5 μ M TR reduced dexamethasone-induced gene and protein expression of collagens induced by HTMC. The mechanisms leading to reduction in these expressions by TR are yet to be investigated. This project is funded under grant 600-IRMI/FRGS 5/3 (413/2019).

TRENDS IN ANTIBODY RESPONSE AFTER VACCINATION IN RECIPIENTS WITH PRIOR MODERATE OR SEVERE COVID-19 INFECTION

Amir Muhaimin Akmal Shukri^{1*}, Siti Farah Alwani Mohd Naw², Muhammad Amin Ibrahim³, Mohammed Fauzi Abdul Rani³, Mariam Mohamad⁴, Wang Seok Mui², Ariza Adnan², Fatmawati Kamal⁵

1. Institute of Medical Molecular Biotechnology, Faculty of Medicine, Universiti Teknologi MARA, Sg. Buloh Campus, Selangor, Malaysia. Email: muhaiminshukri97@gmail.com
2. Department of Medical Microbiology and Parasitology, Faculty of Medicine, Universiti Teknologi MARA, Sg. Buloh Campus, Selangor, Malaysia.
3. Respiratory & Sleep Diagnostic Unit, Department of Medicine, Faculty of Medicine, Universiti Teknologi MARA, Sg. Buloh Campus, Selangor, Malaysia.
4. Department of Public Health, Faculty of Medicine, Universiti Teknologi MARA, Sg. Buloh Campus, Selangor, Malaysia.
5. Department of Pathology, Faculty of Medicine, Universiti Teknologi MARA, Sg. Buloh Campus, Selangor, Malaysia.

Introduction: The SARS-CoV-2 infection ranges from asymptomatic phase to severe respiratory illness leading to death and has been shown to affect the level of antibody response. The magnitude of antibody response in SARS-CoV-2 infection is higher in severe disease and those who received 2 doses of SARS-CoV-2 vaccines but waned significantly after its peak. This study aims to assess the level of antibody response among fully vaccinated recipients with prior moderate (category 3) or severe Covid-19 infections (categories 4 or 5). **Methods:** The serological sample from the recipients was subjected to quantitative immunoglobulin level measurement to the receptor-binding domain (RBD) of SARS CoV-2 spike (S) protein using ELISA method. A total of 43 vaccine recipients who were all COVID-19 survivors were followed up at a median of 97 [5] days after discharge. **Results:** The median age was 48 [19] years old, majority were male (26/47), COVID-19 category 4 (22/43) followed by category 5 (20/43) and category 3 (1/43). Most subjects received BNT162b2 vaccine (24/43) followed by CoronaVac (16/43) and ChAdOx1 (3/43). Antibodies were present in all recipients with median level of 172.881 [11.593] BAU/mL and significant differences in antibodies were observed between BNT162b2 and CoronaVac, 174.901 [7.358] vs 165.1735 [16.096] ($p < 0.001$), respectively. No differences were observed between genders; male 171.812 [10.232] vs female 173.340 [28.493] ($p = 0.258$), and COVID-19 severities; category 4 - 173.111 [11.429] vs 5 - 172.652 [12.734] ($p = 0.870$). There were trends of declining antibody levels overtime after the first and second dose of vaccine, $r = -0.082$ ($p = 0.6$) and $r = -0.145$ ($p = 0.373$), respectively. **Conclusion:** These data showed a trend of declining antibody levels measured at an average of 3 months among the three types of COVID-19 vaccine. Further studies are necessary in understanding the long-term antibody response following vaccination and the risks of re-infection.

PATTERNS AND OUTCOMES OF REFERRALS TO HOSPITAL UiTM PALLIATIVE AND SUPPORTIVE CARE UNIT DURING THE COVID-19 PANDEMIC: A RETROSPECTIVE STUDY

Shafawati Akmal Adam¹, Emy Shahida Zulkefli², Hayatul Nawwar Miptah^{2*}, Mazapuspavina Md Yasin¹, Diana Katiman²

1. Department of Primary Care Medicine, Hospital Universiti Teknologi MARA, Puncak Alam.
2. Palliative and Supportive Care Unit, Hospital Universiti Teknologi MARA, Puncak Alam.
Email: nawwarmiptah@uitm.edu.my

Introduction: Hospital Universiti Teknologi MARA (HUiTM) is an expanding network of medical facilities with the UiTM Palliative and Supportive Care Unit (PCU) developing into a dynamic and active establishment, providing inpatient services and outpatient clinics. **Aims:** This study evaluates the patterns and outcomes of referrals to the UiTM PCU from January 2020 to December 2021. **Methods:** This is a retrospective cross-sectional study, reviewing records of all patients referred to UiTM PCU from 1st January 2020 to 31st December 2021. Descriptive statistics were analysed using SPSS version 28 and the domains include demographic data, referral team and location, disease classification, reason for referral and patient's outcome. **Results:** A total of 186 new referrals of which 84 were received in 2020 and 102 in 2021. There were 87 (46.8%) male and 99 (53.2%) female patients with mean age of 67.2 years old. Of these, 84.9% of patients were Malay, followed by Chinese (10.2%), Indian (4.2%) and one Caucasian (0.5%) . A total of 102 (54.8%) patients had non-cancer diagnosis, while the remaining 84 (45.2%) patients were cancer related. In 2021, 21.3% of the referrals of non-cancer patients were related to COVID-19. Majority (84.4%) of the referrals were for symptomatic control. The medical team contributed to most of the inpatient referrals (87.5%) while 39.7% of the outpatient referrals were from external facilities. From the referrals, 54.7% were discharged home, 23.4% died and 21.9% were for terminal discharge. However, of those discharged, 83 (44.6%) did not manage to come for outpatient visits. **Conclusion:** UiTM PCU had an increasing number of referrals within and outside HUiTM throughout the pandemic. Majority were discharged home, although most did not survive even for the first follow-up appointment. This trend is likely to continue and UiTM PCU must further expand its services to cater for the increasing needs.

FURLING THE SAIL: COVID-19 OUTBREAK ONBOARD A CRANE VESSEL IN JOHOR BAHRU WATERS

Mohamad Fikri Haikal Ahmad Kamal*, Mohd Anwar Shahrir Ahmad, Haidar Rizal Toha, Norli Rosli

Johor Bahru District Health Office, Johor State Health Department, Johor, Malaysia.
Email: fikrihaikal.ak@gmail.com

Introduction: There were 21 COVID-19 clusters which were ships-related in Malaysia since the pandemic started up until January 24, 2022, of which 8 clusters were located in the district of Johor Bahru. Johor Bahru District Health Office implemented quarantine on a pipelay crane vessel in a seaport in Pasir Gudang between May and June 2021 in an attempt to control the outbreak of COVID-19 onboard. **Aims:** We described the containment measures that were taken and the challenges that we faced in handling this cluster. **Methods:** A total of 206 crew members and visitors of the vessel were tested for presence of Severe Acute Respiratory Syndrome Novel Coronavirus 2 (SARS-CoV-2) using Reverse-Transcription Polymerase Chain Reaction (RT-PCR). **Results:** Of those tested, 74 (35.9%) tested positive for COVID-19, of which 64 (86.5%) were asymptomatic. As of July 10, 2021, 1 crew member was hospitalised, and none required ventilator support. There were zero deaths in this cluster. The challenges in implementing quarantine were in aspects of accessibility of the vessel, logistics, bureaucratic red tapes, dynamicity of travel-related control measures, maintaining safe daily operations and different health literacy background. **Conclusion:** Although there were many hurdles in implementing quarantine on the vessel, it was a necessary measure in order to control the outbreak. We recommend organisational planning in implementing quarantine on a vessel as it requires abundance of support and resources. Shipping industry is essential in maintaining the global supply chain, thus there is a compelling need to discuss a global framework to protect seafarers from emerging infectious diseases on vessels that could potentially spill over into local communities.

PSYCHOSOCIAL LIVE EXPERIENCES OF NURSES CARING FOR COVID-19 PATIENTS: A SYSTEMATIC REVIEW

Ai Ling Chen*, **Rekaya Vincent Balang**

Department of Nursing, Faculty of Medicine and Health Science, University Malaysia Sarawak, 94300, Samarahan, Malaysia.

Email: alchen@unimas.my

Introduction: As the “gatekeepers” of the health care system, nurses at the forefront of the COVID-19 pandemic played important roles in caring for all types of patients and had the most contact with COVID-19 infected patients. This systematic review aimed to evaluate the psychosocial experiences of the nurses providing care for COVID-19 patients. **Methods:** Numerous databases were used in the article search using relevant keywords. The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) flow diagram was used in selecting a total of 1489 articles. The studies were screened and selected based on the inclusion and exclusion criteria. Quality appraisal was conducted using the Joanna Briggs Institute (JBI) Critical Appraisal guidelines. **Results:** A total of 26 studies were included in the review. The experience of 497 nurses from 16 countries were synthesised. Results revealed nurses dealing with COVID-19 patients in the form of psychological experiences, social experiences, and coping strategies of various challenges and obstacles throughout their journey of the pandemic. Nurses working frontline during the COVID-19 pandemic have experienced psychological distress and social stigma in coping with work demands, social relationships and their personal life. **Conclusions:** There is evidence to highlight that nurses do experience some distress during the COVID-19 pandemic. However, there are inadequate studies looking at psychosocial experiences in Malaysia. Protecting the nurses’ psychosocial wellbeing by providing adequate psychosocial support is essential to ensure long-term capacity of the health workforce.

POST COVID-19 CONDITION CHARACTERIZATION: ANALYSES OF THE COVID-19 REHABILITATION OUTPATIENT SPECIALISED SERVICES (CROSS) DATABASE IN THE PRIMARY DESIGNATED HOSPITALS IN MALAYSIA

Akmal Hafizah Zamli^{1,4*}, Nor Arisah Misnan², Wan Najwa Wan Zohdi³, Kavitha Andiappan¹, Norhamiza Mohd Noor¹, Shafik Eiman Abdul Razak¹, Nurakmal Baharum⁴

1. Infectious Disease Unit, Medical Department, Hospital Sungai Buloh, Ministry of Health Malaysia.
2. Department of Rehabilitation Medicine, Hospital UITM, Puncak Alam, Selangor, Malaysia.
3. Centre for Coordination Clinical Research Network, Institute of Clinical Research, National Institutes of Health, Ministry of Health, Selangor, Malaysia.
4. Rehabilitation Medicine Department, Hospital Sungai Buloh, Ministry of Health, Selangor, Malaysia.
Email: dr.akmal@moh.gov.my

Introduction: While most COVID-19 survivors completely recover, a proportion of them experience a constellation of persistent symptoms such as fatigue, breathlessness, cognitive dysfunction and psychological effects. These multi-system sequelae are collectively known as post COVID-19 condition (PCC). Systematic research to further understand PCC is required to develop an evidence-based multidisciplinary approach for management of these patients especially within the healthcare facilities in Malaysia. **Methods:** A descriptive analysis of the prospective database series of referrals for **C**COVID-19 **R**ehabilitation **O**utpatient **S**pecialised **S**ervices (**CROSS**), Hospital Sungai Buloh from November 2020 – December 2021 were included. **Results:** Out of total 2,894 COVID-19 survivors (mean age 52.4 ± 13.23 years); 1,885 (65.1%) reported persistent symptoms of ≥ 3 months. PCC was characterized by a wide variety of symptoms including fatigue, exertional dyspnea, cough, pain, insomnia, myopathy, neurological dysfunction (numbness, giddiness, headaches), psychological dysfunction (anxiety, stress, depression), hair loss, cognitive dysfunction (brain fog), skin lesions, ageusia, anosmia, sexual dysfunction, cardiovascular symptoms (palpitation, chest tightness and pain) and others. Moderately severe functional limitations using the Post COVID-19 Functional Scale (PCFS) were observed in 178 (6.15%) survivors. Gender, race, comorbidities, pulmonary embolism and organising pneumonia were found to be significantly associated with PCC ($p < 0.001$). Multiple logistic regression analyses showed female, Indian race, ≥ 3 co-morbidities and organising pneumonia were predictors of PCC. **Conclusion:** A proportion of COVID-19 survivors continue to experience long term multi-system sequelae ≥ 3 months; while some have significant functional limitations that hinder their full reintegration into society. This study provided an initial insight for the required provision of a comprehensive, patient centred and multidisciplinary care in the management of the affected individuals with PCC.

HEAD AND NECK CANCER DETECTION IN HOSPITAL SUNGAI BULOH DURING COVID-19 PANDEMIC

Azuin Izzati Arshad¹, Carren Teh Sui Lin², Shiraz Qamil³, Sitti Farhana Johari⁴, Hani Mohamed⁵, Nur Hanisah Abd Nasir⁶, Nazil Azadi Bin Mohd Azlan⁷, Nesha Rajendram^{8*}

Department of Otorhinolaryngology, Head & Neck Surgery, Hospital Sungai Buloh, Selangor, Malaysia
Email: nesha92rajendram@gmail.com

Introduction and aims: This study was conducted to compare the pick-up rates of head and neck malignancies, duration of symptoms prior to first presentation to hospital and duration to commence treatment among newly diagnosed patients with head and neck malignancies during the COVID-19 pandemic. **Methods:** This retrospective cohort study included newly diagnosed patients aged 18 years and above with head and neck malignancies based on histopathological diagnosis from January 2019 till December 2020 at Hospital Sungai Buloh. Data was analysed using descriptive statistics and Chi-square test. A *p*-value of less than .05 was considered statistically significant. **Results:** There was a significant drop of 56.1% in the total number of new referrals from 12,371 in 2019 to 5,425 in 2020 (*p*= .00001). The pick-up rate for the number of cancer cases based on the overall new referrals increased from 0.27% to 0.39%. The duration to seek the first consultation from the time of symptom appearance had shortened with 23.8% of the patients coming within 1 month of symptoms in 2020, compared to 12.1% in 2019. More patients (66.7%) began definitive treatment within a month in 2020 compared to 51.5% in 2019. **Conclusion:** The increased pick-up rate of head and neck malignancies during the COVID-19 pandemic in 2020 may have resulted in the reduced number of referrals. More patients were seen earlier and received treatment earlier during the pandemic due to the strategic measures (isolated scope room & scoping patients at predetermined time) to improve cancer pick-up rates.

CircSCAND2P AS A POTENTIAL BIOTARGET FOR CHEMORESISTANT COLORECTAL CANCER

Nadiah Abu^{1*}, Shivapriya Jeyaraman¹, Nurul Syakima Ab Mutalib¹, Azyani Yahaya²

1. UKM Medical Molecular Biology Institute. Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia.
Email: nadiah.abu@ppukm.ukm.edu.my
2. Department of Pathology. Hospital Canselor Tuanku Mukhriz, Cheras, Kuala Lumpur, Malaysia.

Introduction: Colorectal cancer (CRC) is one of the most widely diagnosed cancers worldwide, and locally in Malaysia. CRC is conventionally treated with surgery and adjuvant chemotherapy. Nevertheless, chemoresistance in CRC has become a major hurdle for effective disease management. Currently, there is a limited number of feasible biotargets that can be used to desensitize or predict chemoresistance. With the advent of new biomedical technologies, circular RNAs (circRNAs) have been shown to be promising biotargets for cancer. CircRNAs are a recently rediscovered class of covalently closed non-coding RNAs that have been shown to be dysregulated in CRC. Therefore, we aim to study the profile of circRNAs in relation to chemoresistant CRC. **Methods:** We performed high throughput profiling of circRNAs to compare between 5 responders and 5 non-responder CRC samples. Subsequently, a bioinformatics analysis to determine the miRNA binding sites and gene network was conducted. The expression of selected circRNAs was validated via qPCR. **Results:** A total of 131 circRNAs were differentially upregulated and 144 circRNAs were downregulated between the responder and non-responder patients. Most of the dysregulated circRNAs were located on Chromosome 1 and 17. The most downregulated circRNA was circSCAND2P, which was further selected for downstream analysis. Our validation results showed that the expression of circSCAND2P was indeed downregulated in additional clinical samples. Furthermore, our in-silico analysis revealed that circSCAND2P may become a sponge for miR-22-5p. **Conclusion:** Our findings have produced specific circRNA profiles in chemoresistant CRC patients. CircSCAND2P may be a promising biotarget to be further evaluated in order to understand the mechanism of chemoresistance in CRC.

ASSOCIATED FACTORS FOR SEVERE CASES OF COVID-19 INFECTION IN SABAH, MALAYSIA

Abraham Zefongi¹, Prabakaran Solomon Dhanaraj², Richard Avoi^{3*}

1. Surveillance Unit, Sabah State Health Department, Ministry of Health Malaysia, Kota Kinabalu, Sabah, Malaysia.
2. Family Health Development Division, Sabah State Health Department, Ministry of Health Malaysia, Kota Kinabalu, Sabah, Malaysia.
3. Department of Public Health Medicine, Faculty of Medicine & Health Sciences, Universiti Malaysia Sabah, Kota Kinabalu, Sabah, Malaysia. Email: richard.avoi@ums.edu.my

Introduction: COVID-19 was first confirmed in Sabah on 11 March 2020 in Tawau District. Determining factors for severe COVID-19 infection is crucial as it would enable healthcare providers to identify patients who need special attention and appropriate intervention to prevent unfavourable outcomes. The objective of this study was to determine the factors associated with severe cases of COVID-19 infection in Sabah. **Methods:** All confirmed cases of COVID-19 reported to the Surveillance Unit, Sabah State Health Department, Ministry of Health Malaysia from March 2020 to October 2021 were identified. Information on sociodemographic, clinical characteristics and vaccination status were extracted from the record. COVID-19 cases were grouped into mild and severe cases as per definition by the Ministry of Health Malaysia. Univariable and multivariable logistic regression analysis was conducted to identify the factors associated with severe cases. Statistical significance was set at a p-value of less than 0.05. **Results:** A total of 164,088 COVID-19 cases were included in the study. Individuals aged ≤ 5 years old and ≥ 65 years old [adjusted odds ratio (AOR) =1.87, 95% Confidence Interval (CI): 1.77–1.99], non-citizens of Malaysia (AOR=1.46, 95% CI: 1.30–1.64), male gender (AOR=1.06, 95% CI: 1.01–1.12), native Sabahan (AOR=1.30, 95% CI: 1.19–1.42), presence of symptoms of COVID-19 infection (AOR=23.33, 95% CI: 20.75–26.23), presence of comorbidity (AOR=1.80, 95% CI: 1.67–1.94), high exposure risk of COVID-19 infection (AOR=0.44, 95% CI: 0.28–0.71), and incomplete COVID-19 vaccination (AOR=8.53, 95% CI: 7.35–9.89) were significantly associated with developing severe COVID-19 infection. **Conclusion:** Evidence from this study emphasized the importance of access towards quality healthcare for stateless and legally marginalised groups as well as indigenous communities. There is also a dire need to strengthen COVID-19 vaccination program together with administration of COVID-19 vaccine booster dose at appropriate intervals.

BLOCKCHAIN TECHNOLOGY INNOVATION TO STRENGTHEN MEDICAL TOURISM SECTOR DURING COVID-19 PANDEMIC PHASE IN MALAYSIA

Norsiah Kadir^{1*}, Sabri Nayan²

1. Faculty of Business and Management, Universiti Teknologi MARA, Perlis Branch, Arau Perlis, Malaysia.
Email: norsiahkadir@uitm.edu.my
2. School of Economics, Finance and Banking, Universiti Utara Malaysia, Sintok, Kedah, Malaysia

Introduction: Over the last decade Malaysia has grown as one of the top destinations for medical tourism in the world. However, the outbreak of Covid-19 in March 2020 has brought down the medical tourism sector in Malaysia. Hence, Malaysia is now developing measures to build a more resilient medical tourism industry post-Covid-19. Medical tourism sector needs to establish a digital infrastructure that can build trust in medical tourists and exemplifies safety. Employing blockchain technology would be an ideal solution to this matter, since blockchain technology is highly dependent on trust, transparency, affordability, and security. The critical issue then is, would the implementation of blockchain technology in medical tourism significantly cause an accelerated growth in this industry? The main purpose of the present study is to investigate the presence as well as direction of causality between blockchain technology and medical tourism growth in Malaysia. **Methods:** Based on the sample period of 2000 through 2021, the data were examined from the perspective of multivariate causality technique. **Results:** Finding of the study revealed a long run relationship between blockchain technology and medical tourism growth in Malaysia. Besides, results from the multivariate causality test indicate that there is one-way causality running from medical tourism to blockchain technology. **Conclusion:** In accelerating medical tourism growth during Covid-19 endemic phase, the utilisation of blockchain technology is significant and it is in line with the Malaysia Digital Economy Blueprint.

POSTER ABSTRACTS

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IMPACT OF GENDER ON SELF-DIRECTED LEARNING AMONG E-LEARNING NURSING UNDERGRADUATE IN MALAYSIA

Chang Woan Ching, Lim Swee Geok

Nursing Division, School of Health Sciences, International Medical University.
Email: ChangWoanChing@imu.edu.my

Introduction: The demand for online education is on the rise in working nurses for its flexibility and accessibility to further their studies and to enhance their professional development, particularly during the COVID-19 pandemic. The ability to be self-directed in learning is imperative for nurses to continue their education using an e-learning approach. **Aims:** This study aims to investigate gender differences in overall self-directed learning among working nurses in e-learning nursing programmes. **Methods:** The conceptual framework of the study is based on the concept of a self-directed learning model. This is a cross-sectional quantitative correlational study using a multivariate analysis method to test the hypotheses. Stratified random sampling technique was employed to recruit 241 nursing students through an online survey. The Self-directed Learning Instrument (SDLI) was adopted to measure the dependent variables of the study. **Results:** The findings of the study revealed statistically significant differences between gender and dependent variables ($p < 0.05$) of learning motivation, planning and implementation, interpersonal communication, and self-monitoring. Male nurses reported higher levels of self-directed learning than female nurses. **Conclusion:** This study highlights the important concepts of self-directed learning among online learners. The role of educators is essential to support students for self-direction in e-learning. Future studies to explore other possible determinants in e-learning context are recommended.

CHILDHOOD VACCINE HESITANCY AND ITS ASSOCIATED FACTORS

Nur Suhaila Mohd Pauzi¹, Ummil Khir Yaakub¹, Nur Elyshia Karlina Shahrol Nizam¹, Nor Azam Kamaruzaman²

1. Kulliyyah of Medicine, International Islamic University Malaysia, Kuantan. Email: suhaila.pauzi97@gmail.com
2. Department of Family Medicine, IIUM Kuantan, Pahang, Malaysia

Introduction: COVID-19 era has led to a surge in vaccine hesitancy. It is predicted that this would negatively impact the more established childhood vaccination program. We aim to summarize the prevalence of childhood vaccine hesitancy and its associated factors. This review was conducted and reported in accordance with the PRISMA-ScR checklist. **Methods:** A scoping review was conducted through Scopus[®], PubMed[®], and Cochrane Library databases published from January 2016 to November 2021. The results were filtered to include articles that were full-text, available in English and focused on hesitancy for childhood vaccination. The factors were then grouped into four themes (caregivers, health providers, vaccine specific, and contextual factors). **Results:** A total of 576 articles were retrieved, from which 83 articles were included in this review. 52% articles were published within the last 2 years with 49% were cross-sectional studies and 39% came from the United States, Canada and Italy. The prevalence of vaccine hesitancy ranged from 3 to 50.6% with a mean of 25.8%. Factors related to caregiver's theme were the major contributor to vaccine hesitancy: caregivers' belief, attitude and knowledge about health (78%), trust to health system (33.7%) and socio-demographic (32.5%) while the other 3 themes are less notable (3-18%). **Conclusion:** Childhood vaccine hesitancy is on the rise and is a significant issue in developed countries especially during COVID-19 pandemic. Issues among caregivers are prominent compared to other factors. A proactive and multi-interventional approach by stakeholders are critical to increase caregivers' confidence, competence, and convenience of vaccination uptake. This would ensure the sustainability of existing vaccination programmes for children.

IMPACT OF PHYSICAL ACTIVITY ON QUALITY OF LIFE'S COLORECTAL CANCER SURVIVORS : A SYSTEMATIC LITERATURE REVIEW

Najibah Abdul Razak^{*1}, Zahir Izuan Azhar¹, Zaliha Ismail¹, Shaiful Amir Abdul Manap¹, Zairul Azwan Mohd Azman², Nurhidayu Ramli³

1. Faculty of Medicine, Universiti Teknologi MARA, Sg. Buloh Campus, Selangor, Malaysia. Email: najibahendut@gmail.com
2. Department of Surgery, Hospital Canselor Tuanku Muhriz, Cheras, Kuala Lumpur, Malaysia.
3. Department of Physiotherapy, Hospital Canselor Tuanku Muhriz, Cheras, Kuala Lumpur, Malaysia.

Introduction: Early diagnostic and treatment advances have resulted in prolonged cancer survivorship. Therefore, good post-treatment management is critical for enhancing the cancer survivors' health and quality of life. Physical activity may significantly reduce the consequences of cancer therapies such as fatigue, loss of physical fitness, and psychological issues, which subsequently improve the quality of life among colorectal cancer survivors. Hence, this review aims to identify the impact of physical activity on colorectal cancer survivors' quality of life. **Methods:** EBSCOhost, Web of Science (WOS), Scopus, ScienceDirect and PubMed were searched from 2010 through 2020, specifically studies in English language. Studies included adults above 18 years old diagnosed with colorectal cancer and determining the effects of physical activity on quality of life outcomes among colorectal cancer survivors. **Results:** A total of 1,961 articles were identified, of which 16 fulfilled the eligibility criteria for the review. This review shows a significant effect of physical activity on improving the quality of life among colorectal cancer survivors. A higher level of moderate-vigorous physical activity (MVPA) was associated with an increase in physical functioning, feeling less fatigue, distress and pain, however the same was not observed with mental functioning among the colorectal cancer survivors. **Conclusion:** Physical activity intervention is recommended to be implemented among colorectal cancer survivors to improve their quality of life in the long run to prolong their cancer survivability.

THE MURTAGH'S PRIMARY MASQUERADE IN SYMPTOMATIC PATIENTS WITH HEART FAILURE – TWO CASES OF HYPOTHYROIDISM

Jazlan Jamaluddin^{1*}, Mohd Azzahi Mohamed Kamel², Siti Nuradliah Jamil³

1. Klinik Kesihatan Kuala Lumpur, Jalan Temerloh, Titiwangsa, 53200 Kuala Lumpur, Wilayah Persekutuan Kuala Lumpur, Malaysia. Email: jazlanjamaluddin@gmail.com
2. Department of Primary Care Medicine, Faculty of Medicine, Universiti Teknologi MARA (UiTM), Jalan Prima Selayang 7, 68100 Batu Caves, Selangor, Malaysia.
3. Klinik Kesihatan Sultan Ismail, Jalan Persiaran, Jalan Mutiara Emas Utama, Taman Mount Austin, 81100 Johor Bahru, Johor, Malaysia.

Introduction: Patients are often referred to primary care for continuation of care after being discharged from tertiary centres. However, many of these patients may still have ongoing and ambiguous symptoms which are often a clinical conundrum. We report two cases of patients with heart failure with ongoing reduced effort tolerance and lethargy who were diagnosed with one of Murtagh's primary masquerades. **Case Report: Case 1:** A 74-year-old lady came to the primary care clinic for review after recurrent admissions for acute heart failure within six months. She presented with reduced effort tolerance and fatigue. She had not received medical care for 20 years prior to the first admission. Her movement and speech were slow. She was also bradycardic. Further examination showed a necklace scar mimicking neck lines which was inconspicuous previously. Her fasting lipid profile one month ago was markedly deranged. Thyroid function test (TFT) showed TSH of 28.5mIU/L and free T4 of 2.5pmol/L. Upon further history, she had thyroidectomy done almost 40 years ago for possible Graves' disease. She was started on levothyroxine for post thyroidectomy hypothyroidism. **Case 2:** A 83-year-old lady with ischemic heart failure with preserved ejection fraction for five years, hypertension and dyslipidaemia presented with worsening reduced effort tolerance and lethargy. She has no other symptoms. Her hair was thin with generalised dry and coarse skin. Her pulse rate was normal. There was no neck swelling. TFT showed TSH of 93.2mIU/L and free T4 of 6.2pmol/L. Anti-thyroid peroxidase was positive. She was diagnosed with Hashimoto's thyroiditis and started on levothyroxine. Both patients' symptoms have significantly improved with normalisation of thyroid function at six months follow up. **Conclusion:** Patients with heart failure may present with symptoms of hypothyroidism masquerading as heart failure. A high index of suspicion with proper assessment is warranted to comprehensively manage these patients.

**AN ADULT WITH FINGER MASS – A COMMON YET COMMONLY OVERLOOKED
CASE OF GIANT CELL TUMOUR**

Jazlan Jamaluddin^{1*}, Lee Yeow Siong²

1. Klinik Kesihatan Kuala Lumpur, Jalan Temerloh, Titiwangsa, 53200 Kuala Lumpur, Wilayah Persekutuan Kuala Lumpur, Malaysia. Email: jazlanjamaluddin@gmail.com
2. Klinik Kesihatan Selayang Baru, Jalan Sungai Tua, Batu Caves, 68100 Selangor Darul Ehsan, Malaysia

Introduction: Hand mass in adults is encountered regularly in daily general practice and can often be perplexing as many differential diagnoses need to be considered. We report a case of an adult presented with a finger mass. Further investigations confirmed a common, benign and yet aggressive tumour diagnosis. **Case report:** A 42-year-old man with hypertension presented with persistent left index finger mass for 6 months. The mass was small and had gradually increased in size with limited finger flexion. No skin changes or neurological symptoms were noted. The mass was not preceded by trauma or fever. There was no other joint swelling, lymph nodes enlargement, cough, dysphagia or neck swelling. Physical examination showed a firm mass over the volar surface of the left index finger. There was no tenderness or redness. The range of movement especially upon flexion was limited due to the mass. The rest of the head and neck, chest, upper limbs and neurovascular examination were unremarkable. Blood investigations, including a full blood count, renal profile, liver function test, serum uric acid, fasting sugar and lipid were within the normal ranges. A plain hand radiograph showed soft tissue shadow with no bony involvement. MRI of the left hand showed a solid soft tissue lesion measuring approximately 0.6cm x 1.2cm x 2.6cm. The diagnosis of giant cell tumour (GCT) of the flexor tendon sheath was highly suspected. Excision of the mass was done under local anaesthesia. The histopathology report confirmed the diagnosis of GCT. **Conclusion:** This case highlights the importance of considering GCT as a differential diagnosis for adults with a firm finger mass that are otherwise asymptomatic. A prompt diagnosis and early intervention of GCT is important to reduce the risks of complications.

AN UNUSUAL CAUSE OF IRRITANT CONTACT DERMATITIS: THE UNEXPECTED EFFECT OF GARLIC MEDICAMENT

Jazlan Jamaluddin^{1*}, Siti Nuradliah Jamil²

1. Klinik Kesihatan Kuala Lumpur, Jalan Temerloh, Titiwangsa, 53200 Kuala Lumpur, Wilayah Persekutuan Kuala Lumpur, Malaysia. Email: jazlanjamaluddin@gmail.com
2. Department of Dermatology, Hospital Selayang, Lebuhraya Selayang - Kepong, 68100 Batu Caves, Selangor, Malaysia, Malaysia.

Introduction: Irritant contact dermatitis (ICD) is a frequently seen skin condition in primary care. The most common causes of ICD include hair dye, nail polish, paints, cleaners, soap and detergent. We present an unusual case of ICD, the cause of which was successfully identified and managed in primary care. **Case Report:** A 20-year-old woman presented with sudden onset of multiple painful localised blisters with redness on the right antecubital fossa. She neither had rashes elsewhere, nor any oral or genital ulcer. She was not on any regular medication and was not on any traditional medication. One day before the presentation, she reported applying raw garlic paste to the area to treat mild itchiness. She has no known allergies or medical illness. Examination revealed multiple bullae on the antecubital fossa with perilesional erythema. The clinical history of immediate bullae formation after direct contact with garlic was consistent with ICD due to garlic medicament. The lesions were managed with regular dressings. At one week follow-up, the lesions had healed well. She was advised to avoid further application of garlic topical medicines. **Conclusion:** Although *Allium sativum* (garlic) has been used either by topical use or orally as a medicinal treatment worldwide for thousands of years to treat various conditions, it has the potential to cause irritant dermatitis when applied to skin and mucosa. Patients and healthcare providers should be cautious on the potential adverse effects of using garlic for medicinal purposes.

PREVALENCE OF MENTAL HEALTH AND THEIR RELATION WITH PARENTAL FACTORS AMONG ADOLESCENTS DURING COVID PANDEMIC IN EAST COAST OF PENINSULAR MALAYSIA

Lena Nanditha Sangaran¹, Azidah Abdul Kadir^{1*}, Lili Husniati Yaacob¹, Faridah Mohd Zin², Azizah Othman³

1. Department of Family Medicine, School of Medical Sciences, Universiti Sains Malaysia, 16150, Kubang Kerian, Kelantan, Malaysia.
2. MSU Medical Centre, Jalan Boling Padang 13/64, Seksyen 13, 40100, Shah Alam, Selangor, Malaysia.
3. Department of Paediatrics, School of Medical Sciences, Universiti Sains Malaysia, 16150, Kubang Kerian, Kelantan, Malaysia.

Email: azidahkb@usm.my

Introduction: The COVID-19 pandemic has made an impact on various aspects of life, including social life and education. Adolescents are known to be vulnerable to develop mental health problems. The study aimed to determine the prevalence of mental health problems among early adolescents and their associations with parental relationships during the COVID-19 pandemic. **Methods:** A cross-sectional that included 535 adolescents aged 13 to 14 years, was conducted using online surveys from February 2021 to April 2022. The participants were from the East coast of Peninsular Malaysia. Mental health status was assessed using Depression, Anxiety and Stress Scale- 21 (DASS-21), and parental or guardian supervision, connectedness, bonding, respect for privacy, physical activity, and risk behaviours were evaluated using the Malaysian Global School-based Student's Health Survey. Multiple logistic regression analysis was done to examine the associations of the variables. **Results:** The prevalence of depression, anxiety and stress was 28.2%, 38.1% and 18.5%, respectively. Adolescent with low parental/guardian connectedness and bonding were associated with depression (AOR = 3.82, 95% CI = 1.80 – 8.08), anxiety (AOR 2.17, 95% CI = 1.34 – 3.50) and stress (AOR 2.29, 95% CI = 1.13 – 4.65). Low parental supervision (AOR = 2.37, 95% CI = 1.19 – 4.54), low academic performance (AOR = 3.57, 95% CI = 1.10 – 11.62), stress (AOR = 8.56, 95% CI = 4.38 – 16.70) and anxiety AOR = 7.83, 95% CI = 4.48 – 13.70) were predictors for depression. Adolescent who was divorced or separated from parents/guardians (AOR = 3.57, 95% CI = 1.10 – 11.62) and married parents/guardian but living apart due to working requirements (AOR = 3.57, 95% CI = 1.10 – 11.62) were at higher risk of stress. **Conclusion:** Depression and anxiety were prevalent among adolescents from the East coast of Peninsular Malaysia. Poor relationship with parents or guardians was a significant factor for mental health problems among these adolescents during the COVID pandemic.

VIRTUAL REHABILITATION USING BAL EX VIRTUAL VERTIGO, STROKE ASSESSMENT AND REHABILITATION DIGITAL HUB AS AN ALTERNATIVE FOR CARE IN THE COVID-19 PANDEMIC

Zuraida Zainun^{1*}, Muhammad Munzir Zuber Ahmadi², Nur Syakirah Che Mat Amin, Nur Hananulwildad Sazmi

1. Department of Neurosciences, School of Medical Sciences, Universiti Sains Malaysia Health Campus, 16150 Kota Bharu, Kelantan, Malaysia. Email: mzm1412@gmail.com, drzuraida@yahoo.com

Introduction: During pandemic covid 19 , most patients found it difficult to come to healthcare facilities or hospitals for their regular follow up treatment . The frequency with which patients attended hospital, physically, declined due to worries of getting infection. They preferred virtual consultations to monitor the progress of their treatment or recovery. Virtual reality (VR) technology is rapidly becoming a popular application for physical rehabilitation and motor control research in developed countries. VR gives us the opportunity to bring the complexity of the physical world into the controlled environment of rehab tools on virtual platforms. In diseases such as stroke or vertigo, patients may have similar outcomes as in physical rehabilitation. Hence, use of virtual rehabilitation may keep patients safe from getting Covid 19 infection. **Methods:** Current study involved patients with Parkinson disease. The participants were randomised into two groups; that received either virtual or physical rehabilitation. **Results:** Both study groups showed improvement in balance and gait, and the virtual rehab group exhibited significantly greater improvements, especially on the Unified Parkinson's Disease Rating Scale. No subject suffered any injury during virtual rehab sessions. **Conclusions:** Use of virtual platforms is expected to increase patient's cooperation and compliance for attending rehabilitation sessions. This approach may benefit certain groups of patients such as those with physical disability, logistic issues and transportation problems.

CASE STUDY: NEGATIVE RT-PCR AND POSITIVE IgG IN TRAVELLERS BOUND TO CHINA

Nurul Syahirah Ahmad Sayuti, Nur Ainaa Mohd Ghazali, Nur Farhana Mohd Nizam, Norhazwani Mohd Suhimi

Mygenome Sdn Bhd, Suite No.03-04, Ground Floor, Menara See Hoy Chan No 374, Jln Tun Razak, 50400 Kuala Lumpur, Wilayah Persekutuan Kuala Lumpur. Email: nurulsyahirah@mygenome.asia

Introduction: The presence of IgG and IgM during N protein antibodies test after completion of two doses of vaccination has caused misinterpretation about SARS-CoV-2-infections. Although the U.S. Food and Drug Administration (FDA) has stated that SARS-CoV-2 antibody tests should not be used to evaluate a person's level of immunity or protection from COVID-19, all travellers bound to China are required to present negative results for both RT-PCR and N protein antibodies test. Therefore, this study aims to report the possible conditions for travellers to comply with the regulations to enter China. **Methods:** A total of 200 travellers who did not contract COVID-19 infection at the time of screening from 13/8/2021 to 16/10/2021 were chosen to participate in this study and were divided into two groups; group A (aged 18-35) and group B (aged >35). Nasopharyngeal and oropharyngeal swab samples were collected for detection of ORF1ab gene, N gene and E gene. Meanwhile, blood samples were collected into an EDTA tube and tested for N protein antibodies. The data was analysed statistically using the student t-test. **Results:** Results showed that all 200 travellers had negative PCR tests and IgM antibodies. However, all travellers in both groups showed positive IgG. In further study, all travellers in both groups received two doses of Sinovac vaccine. Relationships between the timeline of full vaccination to the date of testing showed no significant differences between both groups with 51.82 ± 2.80 and 51.05 ± 2.74 days, respectively. **Conclusion:** In conclusion, all travellers presented with both negative PCR and IgM but positive IgG antibody which was due to vaccination. Therefore, the embassy should take note of this situation and may revise the suitable requirements.

DISEASE PROGRESSION AMONG PERIODONTITIS PATIENTS WITHOUT TREATMENT DUE TO THE COVID 19 PANDEMIC VERSUS PATIENT UNDER SUPPORTIVE PERIODONTAL THERAPY: ONE-YEAR OBSERVATIONAL STUDY

Muhammad Hilmi Zainal Ariffin^{1*}, Faizal Hafez Hidayat¹, Nurul Afiqah Binti Azli Fitri², Siti Nur Fariha Binti Muhammad Ridhwan Rodrigues², Nurul Ain Ramlan³

1. Centre of Periodontology Study, Faculty of Dentistry, Universiti Teknologi MARA, Sg. Buloh Campus, Selangor, Malaysia. Email: muhammadhilmi@uitm.edu.my

2. Faculty of Dentistry, Universiti Teknologi MARA, Sg. Buloh Campus, Selangor, Malaysia.

3. Centre of Comprehensive Care Dentistry Study, Faculty of Dentistry, Universiti Teknologi MARA, Sg. Buloh Campus, Selangor, Malaysia.

Introduction: Periodontitis is an inflammatory disease of the periodontal tissues, which is characterized by loss of support of the affected teeth, specifically periodontal ligament fibres and the bone into which they are inserted. Periodontal disease is assessed and its progression is determined via observations on a site-by-site basis of the tooth Probing Pocket Depth (PPD) and Clinical Attachment Loss (CAL). **Methods:** It was a single centre retrospective cohort study to compare periodontal disease progression between patients with Periodontitis devoid of treatment due to the pandemic (NoTX) versus patients with stable periodontal condition under Supportive Periodontal Therapy (SPT). Using mixed effects modelling, we analysed 130 sites distributed on 392 teeth in 14 patients, and data were collected post 12-month follow-up among patients that did not receive any periodontal management and treatment due to COVID 19 pandemic. The change in the CAL, PPD and tooth loss was used as the outcome variable. **Results:** Statistical analysis showed that there is a significant difference in mean PPD when compared between the NoTX and SPT group ($p < 0.05$). Similar results were also noted for site specific assessment where PPD 3MM showed significant difference between 2 groups ($p < 0.05$). **Conclusion:** The PPD at baseline were an important determinant of the PPD changes, which varied widely according to the site severity. The parameters identified in this study may guide practitioners in determining the type and extent of treatment needed at the site and patient levels.

DEPRESSION AND PSYCHOLOGICAL APPROACH TO EXERCISE – A REVIEW

Mohamad Hafiz Bin Abu Seman

Physiotherapy Department, Faculty of Health Sciences, UITM Pulau Pinang Branch, Bertam Campus. Email: hafizabuseman@uitm.edu.my

Introduction: Depression is a major global problem and it is estimated to be the leading cause of disability worldwide and is also a significant contributor to the overall global burden of disease. Statistics from the Global Burden of Disease, Injuries and Risk Factors Study (GBD) stated that 264 million people and more are affected by depression. During covid-19 pandemic, the prevalence of depressive symptoms was three-fold higher compared to before the pandemic. Most of the reviews done recently proved that exercise is an important management and is also a preventive measure for depression. Meta-analysis from Wegner et al. (2020) shows a significant and consistent positive effect of exercise on depressive symptoms without any adverse effects on both children and adolescents.

Methods: In this review, the psychological approach to exercise among depressive patients are explained and discussed. **Results:** Self-determination theory (SDT), also called theory of motivation, can be introduced to enhance the commitment of people with depression to exercise. SDT interconnects three aspects which are personality, optimal or best functionality and human motivation. Next, affective-reflective theory (ART) is recommended because it is a default-interventionist dual-process theory that highlights the main positive and negative alliance for succeeding physical inactivity or exercise and stresses on the role of thinking rationally about all behavioural options. Social cognitive theory (SCT) that emphasises self-efficacy and the outcome of the behaviour is also one of the psychological approaches to commit to exercise. **Conclusion:** Exercise for patients or individuals with depressive symptoms should be prioritised and relevant psychological approaches may help to promote engagement to exercise.

ASSESSING THE SPATIOTEMPORAL SPREAD PATTERNS OF THE COVID-19 PANDEMIC IN MALAYSIA

Cheong Yoon Ling^a, Sumarni Mohd Ghazali^a, Mohd Khairuddin bin Che Ibrahim^a, Kee Chee Cheong^a, Nuur Hafizah Md Iderus^a, Qistina binti Ruslan^a, Balvinder Singh Gill^a, Florence Lee Chi Hiong^a, Lim Kuang Hock^a

1. Institute for Medical Research, National Institutes of Health, Ministry of Health Malaysia, 40170 Shah Alam, Selangor, Malaysia. Email: cheongyl@moh.gov.my
2. Sector for Biostatistics and Data Repository, National Institutes of Health, Ministry of Health Malaysia, 40170 Shah Alam, Selangor, Malaysia

Introduction: COVID-19 pandemic has greatly affected humans in many aspects. In Malaysia, studies have described the characteristics and trend of the epidemic, evaluated the effectiveness of the policies, and other countermeasures. The spatiotemporal studies on the disease dispersal were limited to monthly and bi-weekly analysis and association with environmental factors. We investigated the daily spatial autocorrelation of COVID-19 cases and identified spatiotemporal clusters of COVID-19 in Malaysia from 25 January, 2020 to 24 February, 2021, before the national vaccination program was initiated. **Methods:** We obtained confirmed cases and deaths from the official GitHub repository. All analyses were based on daily cumulative cases, derived from the sum of retrospective 7-day and the current day for smoothing purposes. Daily global, local spatial autocorrelation, scan statistics of COVID-19 cases were examined at district level using Moran's I and SaTScanTM. **Results:** At the initial stage of the outbreak, Moran's I index > 0.5 ($p < 0.05$) was observed. Local Moran's I analysis delineated the high-high cluster risk expanding from west to east of Malaysia. The cases surged exponentially after September 2020, with the high-high cluster in Sabah, from Kinabatangan on 1 September (Cumulative cases=9,354; Moran's I=0.34; $p < 0.05$), to 11 districts on 19 October (21,363; Moran's I=0.52, $p < 0.05$). The most likely cluster identified from space-time scanning was centered in Melaka (RR=11.93; $p < 0.001$) which encompassed 36 districts with a radius of 178.8km, from November 24, 2020 to February 24, 2021, followed by the Sabah cluster. **Conclusion:** Both analyses complemented each other in depicting underlying spatiotemporal clustering risk, giving detailed space-time spread information at district level. This daily analysis could be valuable insight in real-time reporting of transmission intensity, and alert the public to avoid visiting high-risk areas.

Keywords: COVID-19; LISA; Moran's I; spatial autocorrelation; SaTScan.

EFFECTS OF COVID-19 AMONG HEALTHCARE PROVIDERS IN A TEACHING HOSPITAL

Karthikayini,K.*

Department of Nursing, UMMC; Email: karthikayini@ummc.edu.my

Introduction: Patient safety has been recognized as a global issue leading to potentially avoidable morbidity and mortality during Covid-19 pandemic. **Aim:** This study describes predictors of safety attitude among health care professionals (HCPs) during the COVID-19 pandemic. **Method:** This was a cross sectional study that used Safety Attitudes Questionnaire (SAQ) administered electronically in English and Malay languages to evaluate safety culture domains among HCPs in a teaching hospital. A positive percentage agreement scores of 60% was considered as satisfactory. Comparisons were made among all Healthcare Providers during the pandemic. **Results:** Among 6562 respondents, 3175 (48.4%) completed the questionnaire; 2320 (73%) were female, 1223 (38.5%) were nurses, and 1131 (35.6%) had 5-10 years of working experience. A total of 1000 (31.5%) respondents were redeployed either to a covid ward or non-covid ward within the hospital to assist in clinical care. In terms of exposure to COVID-19, a large majority of allied health professionals (68.4%) were exposed, followed by doctors (53.9%) and nurses (53.1%), in comparison to attendants and support staff. 533 (43.8%) nurses were deployed to another unit/ward during the pandemic. Safety domains showed highest for job satisfaction (71.3%), followed by teamwork (66.5%), however; stress recognition received the lowest percentage (57.9%) scores during the pandemic. Linear regression showed significant improvement in all domains except stress recognition for those HCPs who were exposed to Covid-19. Reduction in teamwork opportunities, Safety climate, Job Satisfaction, Unit Management Perception, Hospital Management perception were found among respondents who were redeployed. Findings revealed safety culture among HCPs to be above satisfactory level, with lower percentages in the stress recognition domain from baseline. **Conclusions:** The overall mean SAQ score was above the satisfactory level, except for stress recognition domain. Interventions to improve patient safety culture should be developed, focusing on stress management.

CHATBOT FOR SELF-REPORT INJURY DURING PANDEMIC USING FLUTTER FRAMEWORK

Hakimi Md Noor^{1,2}, Raihah Aminuddin^{2*}

1. AQ Wise Sdn.bhd , No. 34 Jalan Kampung Tengah 27/48, Taman Bunga Negara, Seksyen 27,40400 Shah Alam, Selangor, Malaysia.
2. Faculty of Computer and Mathematical, Universiti Teknologi MARA, Jasin Campus, Melaka, Malaysia.
Email: raihah1@uitm.edu.my

Introduction: Athletes usually suffer from Musculoskeletal Disorder (MSD). MSD are often degenerative diseases and inflammatory conditions that affect different parts of the body including resulting in Upper Limb Disorders (ULD), Lower Limb Disorders (LLD), and the diseases affecting back (upper and lower). To monitor the athletes' injury, athlete trainers use Subjective, Objective, Assessment, and Plan notes (SOAP) to collect information and evaluate the information. However, during the pandemic, the athlete trainers had difficulty in supporting injured athletes. **Aims:** Therefore, this project aims to design and develop a chatbot application for athletes to do self-reporting of injury. **Methods:** The chatbot application was created in order to collect and assess athletes' injury related information quickly during pandemic. The chatbot interacts with the athlete and collects all the information needed by the athlete trainer to perform the assessment and provide feedback to the athlete. The application uses the Flutter framework using Dart language with Dialogflow Application Programming Interface (API). The questions asked by the chatbot are ruled out using *kommunicate_flutter* packages. **Results:** The application was tested with athlete trainers from the Faculty of Sport Science and Recreation. The results showed that the chatbot can be effectively used during pandemic. **Conclusion:** Chatbots using artificial intelligence can significantly improve and change the process in collecting data especially during pandemic.

BURNOUT AMONG HEALTHCARE WORKERS IN THE COVID-19 PANDEMIC: A CROSS-SECTIONAL STUDY

Nik Ahmad Shaiffudin Bin Nik Him^{1,2}, *Norsuhana Emilinadiah Binti Husin¹, Muhammad Ikmal Bin Saharmi¹, Muhammad Affendie Bin Zubir¹, Nur Ismaz Binti Ismail¹

1. Pusat Pembangunan Hospital Universiti, Universiti Sultan Zainal Abidin
2. Faculty of Medicine, Universiti Sultan Zainal Abidin

Email: emilinadiah@unisza.edu.my

Introduction and aims: Burnout is a condition due to prolonged exposure to work-related stress and presented in the forms of emotional exhaustion, dislike of the current job, and lack of professional competencies. In the COVID-19 pandemic, health care workers experience increasing work tension, consequently leading to a higher level of burnout among the population. Therefore, the purpose of this concept paper is to review the literature that relates to the contributing factors and impact of burnout among healthcare workers, in the context of pandemic COVID-19. **Methods:** This review paper is based on several online databases which focus on relevant keywords related to healthcare workers, COVID-19, and burnout. **Results:** As a result of the thoroughly reviewed literature, this concept paper proposed sociodemographic, personality traits, and coping styles as the three main factors of burnout among healthcare workers in the COVID-19 pandemic. Meanwhile, lower quality of patient care, higher staff turnover rates, and reduced productivity are the impacts of burnout among healthcare workers in the context of the COVID-19 pandemic. **Conclusion:** In conclusion, this review paper provides information on the factors and impact of burnout among healthcare workers in the COVID-19 pandemic. This information will guide future researchers, healthcare providers, and policymakers in navigating and providing more targeted efforts to prevent and intervene burnout among healthcare workers in the context of the COVID-19 pandemic.

**DISTRIBUTION OF FRONTAL SINUS PATTERNS AMONGST MALAYSIAN
POPULATION: A SKULL RADIOGRAPH STUDY**

Damia Iwani Zulkiflee¹, Choy Ker Woon^{1*}, Mansharan Kaur Chainchel Singh^{2,3}, Aspalilah Alias⁴, Eric Chung⁵

1. Department of Anatomy, Faculty of Medicine, Universiti Teknologi MARA, Malaysia.
 2. Institute of Pathology, Laboratory and Forensic Medicine (I-PPerForM), Faculty of Medicine, Universiti Teknologi MARA, Malaysia.
 3. Department of Radiology, Faculty of Medicine, Universiti Teknologi MARA, Malaysia.
 4. Department of Basic Sciences and Oral Biology, Faculty of Dentistry, Universiti Sains Islam Malaysia, Malaysia.
 5. Department of Biomedical Imaging, Faculty of Medicine, University of Malaya, Malaysia.
- Email: choykerwoon@uitm.edu.my

Background: Radiographs have been widely used for forensic identification purposes. The frontal sinus (FS) is resilient to damage, suggesting its potential use for biological profiling. However, the distribution of FS patterns has yet to be explored in the Malaysian population. **Objective:** This study aimed to describe the distribution of FS patterns in relation to sex among adult Malaysians. **Methods:** 409 adults Malaysian posteroanterior (PA) skull radiographs, consisting of 200 males (49%) and 209 females (51%), were included in the study. The FS patterns were classified according to total and percentage of presence or absence of FS, symmetry or asymmetrical (right or left dominant), unilateral absence (right or left), bilateral absence and lobulations. **Results:** The findings showed that bilateral presence FS is common in 95.3% of individuals (195 males and 195 females). Bilateral absence was noted in a small population of 2.7% individuals (2 males and 9 females). Unilateral absence of left and right FS was found in 0.5% (2 males and 0 females) and 1.5% (1 male and 5 females) individuals, respectively. FS symmetry was noticed in 40.8% of individuals (73 males and 94 females). Left dominant asymmetry was seen in 36.0% of individuals (76 males and 71 females), while right dominant asymmetry was observed in 18.5% of individuals (46 males and 30 females). The lobulations were seen more in males than females, with the majority of FS possessing 1 to 3 lobes. **Conclusion:** The findings suggest that the absence of FS is rare, FS symmetry is dominated by the females, and asymmetry and lobulations are more in the male population. This provides an insight of the landmarking placement for measurement during forensic application and the potential use of FS for sex identification among Malaysians.

APPLICATION OF MOBILE APP IN TEACHING MAGNETIC RESONANCE IMAGING (MRI) SAFETY

Wai-Hun Cheah*, Norhasiza Mat Jusoh, Myat Moe Thwe Aung, Husbani Mohd Amin Rebuan, Mohd Salami Ibrahim

Faculty of Medicine, Universiti Sultan Zainal Abidin, Jalan Sultan Mahmud, 20400, Kuala Terengganu, Terengganu, Malaysia. Email: cheahwhun@unisza.edu.my
Corresponding author: Norhasiza Mat Jusoh, hasizamj@unisza.edu.my

Introduction: The COVID-19 pandemic has shifted the radiology education from face-to-face to online teaching. We developed one mobile application as a high-tech approach to aid students in their learning of Magnetic Resonance Imaging (MRI) safety. This app has incorporated all the MRI contraindications and students need to input the data as if they are taking consent in a real situation. Subsequently, after students input the patient's particulars, the app will give a decision whether the patient is allowed to go for an MRI or not. Repetitively using this app and the interactive platform will help students to remember the MRI contraindications more easily. **Aim:** The aim of this study is to develop the mobile application and investigate the effectiveness of the mobile-based teaching method. **Methods:** A cross-sectional study was conducted among 55 final year medical students. A short introduction highlighting the learning objective was given. Pre-test assessment using One Best Answer (OBA) format was conducted. All the students were taught on how to install and operate the mobile application. 10 simulated scenarios were practiced. Students were given 3 days duration to make use of the app by input their imagined scenarios. Subsequently, a post-test assessment was conducted. **Results:** Fifty-five Year 5 medical students participated (29 % female; 71% male). Score improvement was achieved in 43 students (78%). Pair t-test shows statistically significant improvement in post-test assessment with the mean increase of score of 10.4% [95% CI (-13.4, -7.3) ; $t_{54} = -6.803$, $p < 0.001$ from 62.9% (pre-test) to 73.3% (post-test)]. Majority of the student's feedback on this mobile application was good. **Conclusion:** Our study showed this mobile application has the potential to assist students in learning MRI safety topics. The concept of clinical simulation is achieved when students key in various clinical scenarios and get the answer.

MEDICAL STUDENTS' PERCEPTIONS ON THEIR LEARNING ENVIRONMENT DURING PRIMARY CARE POSTING AMID COVID-19 PANDEMIC: A CROSS-SECTIONAL STUDY IN A MALAYSIAN PUBLIC UNIVERSITY

Nur Amirah Shibraumalisi*, Khairatul Nainey Kamaruddin, Hayatul Najaa Miptah, Nik Munirah Nik Mohd Nasir, Salma Yasmin Mohd Yusuf

Primary Care Medicine Department, Faculty of Medicine UiTM.

Email: nuramirah9510@uitm.edu.my

Introduction: The learning environment has been shown to profoundly impact on the students' satisfaction, academic achievement, and learning effectiveness. The COVID-19 pandemic has significantly changed the medical students' learning environment from face to face to online or hybrid methods. Currently, data on students' perception of their learning environment in primary care medicine attachment during the pandemic is scarce. **Aims:** This study aims to determine students' perception of their learning environment during primary care medicine attachment during the COVID-19 pandemic using the Dundee Ready Education Environment Measure (DREEM) questionnaire. **Methods:** This is a cross-sectional study using a self-administered DREEM questionnaire, accessed via Google form involving undergraduate medical students from a Malaysian public university. Participants were year 4 students who had completed primary care medicine posting during the peak of COVID-19 pandemic from 2020 to 2021. The sociodemographic factors and total DREEM mean score, including its domains, were analysed using SPSS version 27. The questionnaires assessed 5 domains; students' perceptions of learning, teaching, atmosphere, self-perceptions, and social perceptions. Higher scores translate into more positive perceptions. **Results:** The majority of the respondents were female (72.2%) and Malay (98.5%). Regarding device usage and internet connectivity, 51.2% of the students used multiple devices, including laptops, tablets and mobile phones for online teaching sessions, with 46.3% of them using campus's Wi-Fi. Many were dissatisfied (51.2%) with the internet connection stability. The total DREEM mean score was 72.94 (SD 28.8) implying a more negative perception. The student's perceptions were viewed negatively across all 4 domains except for the 'perception of atmosphere' domain. **Conclusion:** The student's perceptions of the learning environment were negative. Further studies to assess the factors associated with negative perception will help rectify the affected domains to help students achieve their learning outcomes.

**CONDUCTING OBJECTIVE STRUCTURED CLINICAL EXAMINATION (OSCE) FOR
PRE-CLINICAL YEARS STUDENTS DURING THE PANDEMIC IN UNIVERSITI
MALAYA MEDICAL PROGRAMME (UMMP)**

Nurashikin Moh Dat*, Nur Shahidah Mardhiyyah Alwi, Asma Aziz, Nurul Atira Khairul Anhar Holder,
Hong Wei-Han, Jamunarani Vadivelu

Medical Education & Research Development Unit (MERDU), Faculty of Medicine, Universiti Malaya, Kuala Lumpur, Malaysia. Email: shikin85@um.edu.my

Introduction: Due to the current Covid-19 pandemic and the need for remote learning, Universiti Malaya Medical Programme (UMMP) have shifted from conducting normal face-to-face Objective Structured Clinical Examinations (OSCE) to virtual ones. Alternatively, OSCE is conducted virtually via Microsoft Teams (MST) platform. **Methods:** There are two types of question employed in the virtual OSCE: a) Video submission of clinical examination prior to the exam. Students are required to record and submit a video of their clinical examination based on the scenarios given. b) Live interactive history taking sessions conducted with students and examiners. Several channels are created by administrative staff for each examiner tasked in assessing students during the assessment day. Students are divided into several groups. The examiners will then admit the students one by one into their respective channel and the same process is repeated for the next group session. In addition, students are instructed to register early via MST to ensure that their connections are secure and stable 30 minutes prior to the assessment start time. All instructions and information for the students are posted via Bulletin Board which is an official platform of communication with the students. It is important for all students to be aware of this information prior to the assessments. **Results:** As we never experienced a virtual examination before, a proper planning between the medical education team, the OSCE coordinators, and the IT support system team was conducted. However, the involvement of standardised patients (SPs) is not allowed during the assessments to minimise the risk of Covid-19 infections. **Conclusion:** Standard operating procedure and guideline are rigorously developed with the team to ensure that students could proceed with the assessment and academic year without delaying their graduation.

THE INFLUENCE OF PATERNAL AGE ON SEMEN PARAMETERS AND PREGNANCY OUTCOME FOLLOWING INTRAUTERINE INSEMINATION.

Norazilah Mat Jin^{1*}, Roshalizah Azmi², Mohd Faizal Ahmad³, Abdul Kadir Abdul Karim³, Mohd Shukry Mohd Khalid¹

1. Faculty of Medicine, Universiti Teknologi MARA, Sungai Buloh Campus, Selangor, Malaysia. Email: drnorazilah@uitm.edu.my
2. Obstetrics and Gynaecology Department, Hospital Universiti Teknologi MARA.
3. Faculty of Medicine, Universiti Kebangsaan Malaysia.

Introduction: Up to date, the male factors contributing to subfertility had account for 25 to 40% of subfertility cases, and there was a significant negative association of semen parameters with advanced male partner's age. Combination of the sperm preparation method and assisted reproductive treatment were used for a better chance of pregnancy. **Aims:** This study was to analyzed the influence of age on the sperm quality and the effect of density gradient centrifugation on sperm parameters and pregnancy outcome in infertile couple following intrauterine insemination (IUI). **Methods:** This retrospective cross-sectional study investigating 181 cases of IUI cycles from reproductive clinic of two public universities from January 2019 to December 2020. They were categorized into study group (male partner's age 40 years and above) and control group (male partner's age less than 40 years old). Sperm concentration and sperm motility pre and post density gradient centrifugation (DGC) reports were extracted from the patients' records. Serum beta human chorionic gonadotropin (HCG) more than 25 mIU/L 14 days after IUI was the criteria for the IUI success. **Results:** The mean age of male and female partners were similar in both groups. Sperm parameters showed an improvement after density gradient centrifugation sperm preparation with significant results in grade 1 and grade 3 sperm motility. There was no significant different in the reproductive outcome among the groups. **Conclusion:** Our findings project an improvement in sperm parameters after density gradient centrifugation and the male age is not significantly affect the pregnancy outcome following IUI.

COMPARING STRESSFUL FACTORS AMONG DENTAL STUDENTS PRE AND DURING COVID-19 PANDEMIC

Mohamad F. Khaled¹ Ghasak G Faisal² Ali S Radeef³

1. Kulliyyah of Dentistry, International Islamic University Malaysia, Kuala Lumpur 50728, Malaysia
2. Department of Fundamental Dental and Medical sciences, Kulliyyah of Dentistry, International Islamic University Malaysia.
3. Department of Psychiatry, Kulliyyah of Medicine, International Islamic University Malaysia
E-mail: firdauskhaled@gmail.com

Introduction: COVID-19 pandemic has negatively affected higher education due to the sudden need to shift to an online mode of teaching and learning which is new to the students and lecturers. Dental students are impacted by this type of teaching and learning as a considerable portion of their curriculum requires clinical training on real patients. This study aimed to compare the stressful factor among dental students during COVID-19 pandemic with stressors assessed before the pandemic. **Methods:** This study was conducted among dental students during COVID-19 Movement control order where online teaching and learning were implemented. Dental students at Kulliyyah of Dentistry, International Islamic University Malaysia were given a list of possible stressful factors and were asked to rate these stressors on a scale from 0 (I don't consider it a stressful factor/Does not apply to me) to 4 (I consider it an extreme stressor). The results were compared to the source of stressors among dental students before COVID-19 pandemic. **Results:** There are consistent stressors before and during COVID-19 pandemic such as 'lack of motivation to learn', 'Fear of failing or unable to catch up', 'feeling incompetent', 'Fear of unemployment after graduation' however the ranking and mean score of these stressors increased during COVID-19 pandemic. New stressors emerged during the pandemic which were 'Understanding lecturers during online classes', 'Cannot catch up with online learning', 'Fear of not completing clinical requirements/logbook'. **Conclusion:** Academic related stressors consistently exist among dental students however their severity increased during COVID-19 pandemic. Academic institutions need to adopt strategies to alleviate the newly emerging stressors related to the effect of pandemic on teaching and learning.

TOCILIZUMAB AS A TREATMENT FOR CYTOKINE STORM IN COVID-19 PATIENTS: A SYSTEMATIC REVIEW

Muhammad Huzaimi Haron¹, Mohamad Rodi Isa^{2*}, Hanisa Syahirah Mohd Rashid³, Nur Amanina Adam³, Nur Aliah Awang³, Muhammad Hairul Faez Halip³.

1. Department of Pharmacology, Faculty of Medicine, Universiti Teknologi MARA, Jalan Hospital, 47000 Sungai Buloh, Selangor, Malaysia.
2. Department of Public Health Medicine, Faculty of Medicine, Universiti Teknologi MARA, Jalan Hospital, 47000 Sungai Buloh, Selangor, Malaysia
3. Faculty of Medicine, Universiti Teknologi MARA, Jalan Hospital, 47000 Sungai Buloh, Selangor, Malaysia
Email: rodi@uitm.edu.my

Background: Tocilizumab is a competitive interleukin-6 inhibitor agent that has been proposed to combat the COVID-19-related hyperinflammatory state, known as a cytokine storm. This systematic review is conducted to study the treatment of cytokine storm by Tocilizumab in COVID-19. **Methods:** The search strategy (“COVID-19” OR “COVID19” OR SARS-CoV-2”) AND “tocilizumab” AND “cytokine storm” AND “inflammatory markers” AND (“ICU stay duration” OR “intensive care unit stay duration”) AND “mechanical ventilation requirement” AND (mortality OR death) were manually searched through Web of Science, Scopus, and PubMed databases spanned from March 2020 to November 2021. The inclusion criteria were: research articles, human study, clinical trial, and articles in English. The exclusion criteria were: review articles, case reports, early access, editorial materials, letters, short survey, in vivo or in vitro studies. **Results:** Five articles were included in the analysis. There were four countries had conducted the studies (Italy, China, USA and Netherland) with different study designs (observational (80%) and randomized controlled trials (20%)) involving 649 patients (48% received TCZ) among moderate to severe COVID-19 patients. There were variabilities in the TCZ dosage given with some combination with other medication (methylprednisolone, azithromycin, hydroxychloroquine, lopinavir and ritonavir). TCZ reduce death cases significantly. It improves respiratory function, reduces the incidence of respiratory syndrome and less-invasive mechanical ventilation usage. The level of inflammatory markers such as C-reactive protein, ferritin and lactate dehydrogenase were significantly higher in the TCZ group. **Conclusion:** Tocilizumab may increase survival and favourable clinical course, improved hypoxia, accelerate respiratory recovery, lower hospital mortality, reduce the likelihood of invasive mechanical ventilation, improve clinical symptoms, represses the deterioration of patients (prolonging survival) and improve inflammation and immune cell function.

OTORHINOLARYNGOLOGY SERVICE WITH ONGOING COVID-19 PANDEMIC IN HOSPITAL MELAKA: A SINGLE CENTRE, RETROSPECTIVE, DESCRIPTIVE STUDY.

Mohamed Iliyas Sultan Abdul Kader^{1,2*}, Nadia Syafeera Naserrudin², Abd Razak Ahmad².

1. Department of Otorhinolaryngology- Head and Neck Surgery, Faculty of Medicine, Universiti Kebangsaan Malaysia, Jalan Yaacob Latif, Bandar Tun Razak, 56000 Cheras, Kuala Lumpur, Malaysia.
2. Department of Otorhinolaryngology- Head and Neck Surgery, Hospital Melaka, Jalan Mufti Haji Khalil, 75400, Melaka, Malaysia.
Email: iliyasmbs@gmail.com

Introduction: First case of COVID-19 in Malaysia was reported on 25th January 2020. In less than three months, Malaysia implemented a nationwide Movement Control Order (MCO) to cut down the exponential increase of COVID-19 cases. Hospital Melaka is a state hospital which caters for 930,000 population and was selected to handle COVID-19 cases. Department of Otorhinolaryngology-Head & Neck Surgery (ORL-HNS) heavily involved in managing upper aerodigestive tract conditions. These are potential sites with high COVID-19 viral load. **Aims:** To describe activities of the Department of ORL-HNS Melaka and strategies implemented to decrease cross-infection of COVID-19. **Methods:** Retrospective description of data obtained from Clinic, Operation theatre and Ward registry. We also describe health care policies contributing to very low COVID-19 cross-infection between patients and ORL-HNS healthcare workers (HCW). **Results:** In the year 2020, a total number of 18,317 outpatient visits were made, 10,107 clinic procedures were done. Total number of 366 elective surgeries, 192 emergency surgeries, and 34-day care surgeries were conducted. There were 942 inpatient admissions. There was no COVID-19 cross-infection between patients and ORL-HNS HCW in 2020. **Conclusion:** Despite working in a high-risk environment and performing aerosol generating procedures, ORL-HNS HCW were able to reduce the risk of cross-infection of COVID-19 by adhering to the strict policies laid down by the Ministry of Health of Malaysia and Hospital Melaka.

NON-TYPHOID SALMONELLA (NTS) MYCOTIC ANEURYSM PRESENTS WITH OBSTRUCTIVE UROPATHY

Normi Ngah Mohamed^{1*}, Siti Norbayah Awad¹, Nurul Azira Mohd Shah¹

1. Microbiology Unit, Clinical Diagnostic Laboratories (CDL), Hospital Puncak Alam, Faculty of Medicine, Universiti Teknologi MARA, Selangor, Malaysia. Email: normi@uitm.edu.my

Introduction: Mycotic aneurysm (MA) is a serious clinical condition in which without prompt diagnosis and management leads to severe complications. The signs and symptoms however, are nonspecific, which pose a challenge in diagnosing the condition. **Case:** A 76-year-old lady with hypertension and diabetes mellitus presented with malaise and pain over the left lumbar region for 2 weeks. On admission she was hemodynamically stable, non-febrile, there was tenderness at the right hypochondrium, epigastric and positive renal punch. Blood tests showed increased white cell count ($20 \times 10^9/l$) and CRP (172 mg/L). Blood culture on the second day of admission revealed *Salmonella* spp. Ultrasound kidney showed left hydronephrosis due to proximal hydroureter and ultrasound abdomen showed focal soft tissue density around the left common iliac artery (CIA), internal iliac artery (IIA) and external iliac artery (EIA). CT abdomen revealed severe atherosclerosis of the abdominal aorta and small saccular aneurysm at the proximal left CIA with surrounding soft tissue mass. The appearance and raised infective marker is suggestive of MA. She was treated with intravenous ceftriaxone and responded well. She was then referred to the vascular team for left IIA coiling and CIA stenting. **Discussion:** In this case, the obstructive effects of the MA leading to the patient atypical signs and symptoms. NTS MA, is prevalent in Asian population and is associated with older age and atherosclerosis commonly present with unremitting fever, however was absent in this case, probably indicating that the patient was in a bacteraemia stage leading to metastatic infection. Although she presented with atypical symptoms, with the aid of radiological imaging the diagnosis was confirmed in the early phase. **Conclusion:** Investigation on the underlying cause of obstructive uropathy in patients with positive blood culture of NTS is important to exclude the diagnosis of MA.

PUBLIC STIGMATISATION TOWARDS COVID-19 PATIENTS IN MALAYSIA

Siti Nurul Aini Mohd Rodzi, Noraznira Abd Razak, Joeaiza Juhari, Nurul Aida Harun, Norfaezah Shahren, Siti Musliha Mohd Idris, Khairunnisa' Yussof

Faculty of Business and Management, Universiti Teknologi MARA, Alor Gajah Campus, Melaka, Malaysia.
Email: nurulaini@uitm.edu.my

Introduction: Public stigma can be defined as the ways in which the general public stigmatise people. People are being discriminated against or treated separately and in some situations experience loss of status because of a perceived link with a disease. Some specific populations had become a victim of public stigmatisation and being stereotyped due to their condition which related to COVID-19 either as patient or close contact of the patient. Due to this stigmatisation and stereotyping situation, some people choose to hinder for specific treatment although they had symptoms or being in close contact with the positive COVID-19 patient. **Aims:** In relation to the current situation of COVID-19, this situation will lead to ongoing transmission and the action to control the infection become more vulnerable. This study evaluated the factors that influence stigmatisation towards the patient of COVID-19 in Malaysia. **Method:** In this cross-sectional study involving 215 respondents, the association between level of stigma with controllability, responsibility and blame were examined using Pearson correlations. The analysis was carried out by using Statistical Package for the Social Sciences (SPSS) software. **Result:** Controllability, responsibility and blame are the three attributions used to determine stigmatisation. Only responsibility and blame indicated a positive relationship with stigmatisation. **Conclusion:** According to the result, there is still lack of awareness on this particular disease thus resulting in stigmatisation. Majority of the respondents will still keep their distance with the patient of COVID-19 although they are fully recovered. However, they are not considered the patient as a burden to them. Therefore, it is necessary to create awareness about stigmatisation and its' implications towards the patients infected with COVID-19 and the citizens itself.

THE PREDISPOSING FACTORS FOR SEVERE COVID-19 INFECTION AMONG PREGNANT WOMEN IN SELANGOR, MALAYSIA: A RETROSPECTIVE COHORT STUDY

Siti Hayati Mohd Nahwari*, Nur Hamizah Mohamad, Lela Nadia Khalid, Mastura Sohaimi, Eunice Ng Soo Khian, Norhana Mohd Kasim, Norashikin Abdul Fuad.

Department of Obstetrics and Gynaecology, Hospital Sungai Buloh, Malaysia.

Email: cthayatie82@gmail.com

Introduction: The physical and physiological changes in pregnant women predispose them to have more severe COVID-19 infection. **Aim:** To investigate the demographic and the contributing factors leading to severe COVID-19 infection during pregnancy. **Methods:** A retrospective cohort study was carried out from 1st January to 31st December 2021 in a tertiary hospital designated solely for treating COVID-19 infections. All patients admitted with COVID-19 infection that are pregnant or within puerperium period were included. The clinical information was obtained from admission until discharge. Descriptive analysis, Relative Risk, Chi-Square and Fisher Exact Tests were used to analyse the data. **Results:** A total of 3428 patients with mean age of 30.250 (SD 5.1579) years, with the majority in their second and third trimesters (26.6% and 54.3% respectively), were studied. 8.7% (n=297) had severe COVID-19 infection (Category 4 and 5). Severe infection was more marked in pregnant women with BMI >30kg/m² with Relative risk (Rr) 1.458 (95%CI 1.095-1.941) and pre-existing comorbidities such as diabetes mellitus Rr 2.080(CI 1.230-3.518), hypertension Rr 1.416(CI 0.760-2.639), asthma Rr 1.593(CI 1.033-2.457), chronic kidney disease Rr 1.781(CI 0.495-6.402) and pregnancy induced hypertension or pre-eclampsia Rr 1.118(CI 0.379-3.296). Conversely, gestational diabetes mellitus on treatment Rr 0.671 (CI 0.432-1.041) was not shown to increase the risk of developing severe COVID-19. 88.2% of severe COVID-19 infections occurred in unvaccinated or incompletely vaccinated women (p<0.05). 13% of the patients delivered during active COVID-19 infection. 35.7% of deliveries were iatrogenic and preterm. Only two neonates tested positive for SARS-CoV-2 following delivery. **Conclusion:** Incomplete vaccination with underlying comorbidities increases the risk of severe COVID-19 infection in pregnant women. The rate of vertical transmission to neonates is low (3%).

IMPROVEMENT OF CONFIDENCE LEVEL FOLLOWING AN INTERACTIVE REAL-TIME ONLINE NASOPHARYNGEAL SWABBING TRAINING SESSION.

*Salma Yasmin Mohd Yusuf¹, Khasnur Abd Malek¹, Intan Kartika Kamarudin²

¹Department of Primary Care Medicine, Faculty of Medicine UiTM

²Department of Otorhinolaryngology, Faculty of Medicine UiTM

Email: salmasoton@gmail.com

Introduction: Nasopharyngeal swab (NPS) performers need adequate training to confidently conduct effective and safe NPS procedures. The COVID-19 pandemic, however, had made the traditional face-to-face training undesirable due to its risk of spreading infections. The strategy to use readily available NPS demonstration via YouTube videos is of concern since some of the videos show improper techniques. **Aims:** This survey aims to assess the confidence level of participants who attended a real-time online training session for nasopharyngeal swab (NPS) sampling and handling. **Methods:** We developed an interactive, real-time online training session to train the primary care medicine providers on NPS swabbing and handling. The content was crafted and delivered by experts in their respective fields to include certified NPS trainers, otorhinolaryngologists, and a medical laboratory technologist. The training consists of; 1) Sequence of donning and doffing of personal protective equipment; 2) Tutorial session outlining the anatomy of the nasal cavity; 3) A live endoscopic demonstration of the nasal passage anatomy and nasal swabbing procedure, and 4) Interactive discussion on handling the samples. A pre and post-training survey on participants' confidence level on performing and handling the nasopharyngeal swab was collected via the Slido® platform. **Results:** A total of 50 participants attended the training. The results showed that compared to pre-training levels, the percentage of participants 'being very confident' had increased from 3% to 36%, while the percentage of 'rather confident' had increased from 37% to 64%. Meanwhile, the percentage of 'not confident', 'less confident' and 'not sure of confidence level' had all decreased to 0% from 14%, 11%, and 37% respectively after the online training. **Conclusion:** Online NPS training which incorporates a real-time nasal endoscopy video can be a valuable strategy to train nasopharyngeal swab performers.

ASSESSMENT OF ASTHMA AND COPD CARE PRACTICES IN A UNIVERSITY PRIMARY CARE CLINIC

Nik Munirah, Nur Nadhirah*, Siti Mariam, Shafawati Akmal, Nurulhana, Rozaliekah, Mohd Zulfikry,
Muhammad Shah, and Mohd Farid

Department of Primary Care Medicine, Universiti Teknologi MARA (UiTM).

Email: dr.nurnadhirah@gmail.com

Introduction: Asthma and COPD (chronic obstructive pulmonary disease) are common obstructive pulmonary diseases encountered in primary care. Evidence based practices according to the current guidelines ensures delivery of high-quality care which would lead to better disease outcomes. Thus, there is a need to assess what is currently practiced to identify gaps in the quality of care. **Aim:** The aim of this study is to assess the practices in asthma and COPD management in a university primary care clinic and compare it with the current recommendations based on the latest clinical practice guidelines. **Methods:** This is a mixed cross-sectional study looking at current clinic service structure, followed by a retrospective study of the process and outcome measures for asthma and COPD management. The patient's medical records were obtained via the electronic database (UNIMEDS). The data collected include sociodemographic, clinical characteristic, clinic structure, management process and outcome. The results were then analyzed and compared to the practice standards. **Result:** Majority of the asthma patients were female while male dominated the COPD group with the age group 60 and above predominating both obstructive diseases. In terms of the structure there is self-management support for asthma patients however the same is not available for COPD patients. 4 out of 6 process of care standards were not met for asthma while all 8 were not met for COPD. In terms of outcome of care, 78.8% patients achieved ACT (Asthma control test) score of more than 20. However, the percentage for pneumococcal immunizations were not achieved. **Conclusion:** There is urgency to rectify gaps in the quality of obstructive pulmonary diseases management in this clinic setting. The multidisciplinary team plays a big role to spearhead these changes at each stage in the delivery of care.

COVID-19 DETECTION USING MACHINE LEARNING IN CHEST XRAY

Anas Tharek*¹, Soo Tze Hui¹, Ahmad Sobri Muda¹, Fatimah Sidi², Iskandar Ishak², Hazeman Zakaria¹, Idris Ibrahim¹, Mohd Naim Mohd Yaakob¹, Mohd Fandi Al Khafiz Kamis¹

¹Department of Radiology, Faculty of Medicine and Health Science, Universiti Putra Malaysia, Serdang, 43400, Selangor, Malaysia.

²Department of Computer Science, Faculty of Computer Science & Information Technology Universiti Putra Malaysia, Serdang, 43400, Selangor, Malaysia.

Email presenter: anastharek@upm.edu.my

Introduction: From December 2019, the first case of Covid 19 patient was detected in Wuhan, China. Covid -19 has become a pandemic nowadays. Chest X-ray has played a significant role to help the doctor to make the diagnosis of covid-19 infection. It also helps doctors to see the severity of the disease based on lung involvement. Chest x-ray has been used as a screening tool for detecting Covid-19 infection. High number of Covid-19 infection cases in hospital, causing significant burden to doctor to interpret all the chest x ray in short period of time. This problem could be solved with the help of artificial intelligence. **Methods:** This is a retrospective study using public dataset which allowed by the owner to use for machine learning research. About 12000 images of chest x-rays within the dataset. From 12000 images, 6000 of the images are chest x-ray with covid 19 positive patient and 6000 of the images are images for negative of Covid-19. **Results:** The result shows with an increased number of samples, the “Performance Per Tag” is improved as. Training using 12000 samples of Chest x-ray has shown the best performance with the precision of 99.3%, recall of 99.3%, and M.A.P of 99.7 %. However, other iteration using a smaller amount of sample shows good performance with precision, recall, and M.A.P more than 90%. **Conclusion:** Artificial intelligence helps doctors to make the diagnosis in fast and efficient ways. This is really helpful in the situation with the high number of patients especially in Covid-19 infection.

CHARACTERISTICS OF COVID-19 PATIENTS REFERRED TO THE HUITM PALLIATIVE AND SUPPORTIVE CARE UNIT (PCU) SERVICE

Diana Katiman¹, Muhammad Farid Fauad², Muhammad Amin Ibrahim², Faridah Roslan³, Alan Peter Basil⁴

1. Palliative and Supportive Care Unit, Hospital UiTM. Email: diana@uitm.edu.my
2. Respiratory Unit, Hospital UiTM.
3. Rehabilitation Department, Hospital UiTM,
4. Radiology Department, Hospital UiTM.

Introduction: During the pandemic, Hospital UiTM received COVID-19 positive patients, some of which were referred to the PCU. **Aims:** To determine the characteristics of COVID-19 patients referred to the PCU between May to September 2021. **Methods:** This is a retrospective cross-sectional study, reviewing records of all COVID-19 patients referred to the PCU. Descriptive statistics were used to analyse demographic and clinical data, indications for referral and patients' outcomes. **Results:** Of the 215 COVID-19 admissions, 12 (5.6%) were referred to the PCU. All were off-tagged COVID-19 patients. 4 (33.3%) were male. The mean age was 58 years. 10 (83.3%) had been a Category 5 patient, while 2 (16.7%) were Category 4b patients. Only 1 patient had no background medical illness, with the others having non-cancer-related chronic diseases. 3 (25.0%) had moderate organising pneumonia (OP), while the rest had moderate-severe or severe OP. 6 (50.0%) had CT Pulmonary Angiography-confirmed pulmonary embolism (PE). The mean Day-of-Illness upon referral to the PCU was 48 days. 11 (91.7%) were referred for symptoms control with 5 of them (45.5%) also referred for end-of-life care. All were started on strong opioids. 3 (25.0%) patients passed away in the ward, 2 (16.7%) were terminally discharged, and 7 (58.3%) were discharged as per medical plans. Of these 7, 1 passed away after 2 months of discharge, while the others were still alive after 5 months and discharged from the palliative care service. **Conclusion:** Half of the COVID-19 patients referred to the PCU team are still alive after at least 5 months of discharge. The palliative care approach to caring for COVID-19 patients is individualised and referral does not necessarily mean imminent death.

THE STUDY EFFECT OF DISINFECTANT SOLUTION ON FACE SHIELD'S DURABILITY.

Mohamad Hasif Mohamad Fuzi¹, Ana Syahidah Mohd Rodzi^{1*}, Dzullijah Ibrahim¹, Ahmad Faiz Zubair¹, Muhammad Amin Ahmad Zaki²

1. School of Mechanical Engineering, College of Engineering, Universiti Teknologi MARA, Cawangan Pulau Pinang, Kampus Permatang Pauh, Penang, Malaysia. Email: anasyahidah@uitm.edu.my
2. Faculty of Health Sciences, Universiti Teknologi MARA, Cawangan Pulau Pinang, Kampus Bertam, Penang, Malaysia.

Introduction: The outbreak of Covid-19 around the world makes the demand for face shields increase rapidly. There are various types and shapes of face shield designed with a clear plastic face cover. The purpose of this research is to study the effect of disinfectant solution on 3D printer face shield's process. This process is important in protecting the face shield from any droplets-spread virus. This study evaluated the disinfectant solution for ABS materials applied to different designs of face shield pattern. **Methods:** There are two types of disinfectant solution; Dettol Antiseptic Liquid, (DA) and Sodium hypochlorite, (SH) (10%~ 12%). Both solutions were tested and observed to see the effect of the structure and durability. Initially, the structure of ABS dog bones were soaked for 15 minutes and 30 minutes. Subsequently, each specimen will be tested using a tensile test to determine the durability of ABS. **Results:** The changes of the strength of the specimen at the different times were taken. The difference between the strengths of SH15 and SH30 is 2.172MPa, equivalent to 8.931%, while for DA15 and DA30 is 2.129MPa which is equivalent to 8.965%. The lowest ultimate tensile strength is specimen DA30 with the value of 10.809 MPa, while the highest ultimate tensile strength is specimen SH15 with the value of 13.246 MPa. **Conclusion:** From the tensile test study, the longer the specimen immersed in the disinfectant solution, the lower the maximum force produced. The tensile force of specimens soaked with Dettol Antiseptic Liquid was slightly lower than the specimen that was soaked in Sodium hypochlorite. This indicates that Sodium hypochlorite is more suitable for use as a disinfectant solution ABS material. The findings also found that both disinfectant solutions can affect the ABS material's durability, but the changes are not too significant in time.

INTERACTIVE ROLE PLAY IN ASSISTING STUDENTS TO STAY FOCUSED ON ONLINE CLASSES

Ai-Hong Chen^{1*}, Saiful Azlan Rosli¹, Syamil Ismail¹

1. Faculty of Health Sciences, Universiti Teknologi MARA (UiTM), Puncak Alam Campus, Selangor, Malaysia. Email: chenaihong@uitm.edu.my

Introduction: The COVID-19 pandemic has elicited swingeing changes in education due to the hurried move to online learning. Prior to the pandemic, education primarily embraced traditional means of physical teaching and learning. The COVID-19 pandemic has indisputably pushed education towards virtual platforms. It is very challenging to adjust the pace of teaching accordingly without body language cues in a wide range of learner types and levels. This article describes the usage of role play in online teaching. **Method:** The role plays include the role as presenter, questioner, challenger, supporter and judge. The learning scopes in presenter role cover the capability to highlight key messages of the clinical case, presentation style that grab audience attention, convincing deductive ability and flow of thoughts, organisation skills, language proficiency, professionalism, competency to link the case to relational knowledge and basic concepts. The inquiry learning is the main focus of the questioner. Questioning is the ability to organise the thinking around what is unknown. It encompasses the understanding of philosophy behind six types of questions (clarification, challenging assumption, evidence & reasoning, alternative viewpoints, implication & consequences, and challenging the question itself) with nine types of questioning techniques. The challenger and supporter play contradictory roles to debate professionally to uphold evidence-based practices. The judge takes the role to compare and contrast the facts given to reach a good clinical conclusion. **Results:** A Likert scale of 5 was used to evaluate the satisfaction of learning experience through role play. Approximately 95% of the feedback on both delivery mode and student learning experience are rated as above average/satisfactory. **Conclusion:** Role play can turn online learning from passive and monotone to proactive and interactive. It can be an important component in collaborative learning. Role play has the potential to bridge the gaps between theoretical knowledge and practical competency.

DEVELOPMENT OF A CHATBOT-BASED PROTOTYPE MODEL FOR RADIOTHERAPY COMMUNICATION SKILLS TRAINING (SCIMORT)

Nor A Azmi^{1*}, Nur AM Sukri^{1*}, Muhamad IM Kamal¹, Rozilawati A¹, Noorazrul A Yahya¹, Muhammad SA Fadzil¹, Nani A Suhaimi¹, Noraini A Wahid¹, Saiful I Hussin², Liyana Shuib³

1. Diagnostic Imaging and Radiotherapy Program, School of Diagnostic and Applied Health Sciences, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia. Email: noraniza.azmi@ukm.edu.my
2. Department of Mathematical Sciences, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, UKM Bangi, 43600 Selangor Darul Ehsan, Malaysia.
3. Department of Information Systems, Faculty of Computer Science and Information Technology, University of Malaya, 50603 Kuala Lumpur, Malaysia.

Introduction: Effective communication skills are critical for radiotherapy students to acquire in order to provide exceptional patient care when interacting with patients. Students often feel demotivated to effectively communicate as a result of miscommunication. This study was conducted, with the goal of building a chatbot-based prototype model to support learners in strengthening their communication skills, confidence, knowledge, and critical thinking. **Methods:** The SCIMORT module was developed in this pilot and survey study to successfully promote pre-clinical training in communication skills. Two phases constitute the research project. The initial stage consists of developing the SCIMORT module, which involves creating a 3D realistic virtual patient using Blender and Bot Libre and exporting it via Unity 3D. SCIMORT was developed in accordance with the academic syllabus and learning outcomes of the Clinical Practice of Radiotherapy course, specifically in the simulation and treatment of breast cancer. The second phase entails an evaluation of the SCIMORT by a questionnaire survey. This pilot study has recruited 118 participants, including internal academics and students from Diagnostic Imaging and Radiotherapy (PDR), to assess their perceptions of the SCIMORT module in terms of user acceptance and engagement with the prototype. The data was evaluated using IBM SPSS with a 0.05 significance level. **Results:** All PDR undergraduates were expected to deliver a positive response to the SCIMORT module's user acceptance and engagement in terms of the prototype's adaptability, acceptability, and effectiveness in improving critical thinking and communication skills. **Conclusion:** The SCIMORT module is projected to significantly improve students' communication skills and performance in patient care. The feedback from users will act as a catalyst for updating the next phase prototype by incorporating new features to make it more dynamic and engaging to the learners' needs.

STUDENTS' READINESS AND PERCEPTION ON ONLINE DISTANCE LEARNING (ODL) FOR OBSTETRICS & GYNAECOLOGY COURSE DURING COVID-19 PANDEMIC

Fathi Ramly^{1*}, Mas Irfan Jaya Mahamooth¹, Bahiyah Abdullah¹

1. Obstetrics & Gynaecology, Faculty of Medicine, Universiti Teknologi MARA (UiTM), Sg. Buloh Campus, Selangor, Malaysia. Email: fathi0279@uitm.edu.my

Introduction: COVID-19 pandemic has led to significant modification, yet necessary, in the delivery of the Obstetrics & Gynaecology course for medical students in UiTM. The traditional 8-week face-to-face course was transformed into a 3-week ODL theory block and 5-week hybrid clinical block. This survey aimed to determine students' readiness and perception on the ODL component of the course. **Methods:** A cross-sectional survey was conducted among 2020/2021 Year 3 medical students. The students were invited to complete the questionnaire at the end of each block. The survey included 'Online Learning Readiness Scale' (OLRS) questionnaire which composed of five dimensions (Computer/internet self-efficacy, self-directed learning, learner control, motivation for learning and online communication) using a 5-point Likert scale and a question on perception using a 10-point Likert scale. **Results:** A total of 193 (85.8%) and 200 (88.9%) students responded to the survey in theory and clinical block, respectively. The mean score for OLRs dimensions ranged from 3.22 to 3.96 ($\pm 0.71-0.75$) during the theory block and varied between 3.37 and 3.99 ($\pm 0.59-0.65$) during the clinical block. Computer/internet self-efficacy scored the highest (3.96 ± 0.75 and 3.99 ± 0.60) in both blocks, followed by motivation for learning (3.85 ± 0.73 and 3.92 ± 0.60). Learner control had the lowest score (3.22 ± 0.71 and 3.37 ± 0.65) with distraction from other online activities as the main barrier to ODL. There were no significant differences between mean scores of all OLRs dimensions by gender. The overall perception on ODL was good with a mean score of 7.51 ± 1.4 and 7.59 ± 1.6 , respectively. **Conclusion:** Students demonstrated average level of readiness in all but one dimension and had a favourable perception towards ODL for this course. Distraction from other online activities during ODL was a major challenge and this must be addressed for future improvement.

**PUBLIC PERCEPTION AND CONFIDENCE LEVEL TOWARDS RULING
GOVERNMENT DURING COVID-19 PANDEMIC**

**Leviana Andrew^{1*}, Lywinda Tracy Andrew¹, Darrold Hansen Mathew¹, Norfarahzila Mohd Zamri¹,
Siti Fatimah Abdul Latiff¹**

1. Faculty of Business and Management, Universiti Teknologi MARA, Samarahan Campus, Sarawak, Malaysia. Email: leviana141@uitm.edu.my

Introduction: For the first time in Malaysia's political history, a change of government took place without a general election. The sudden turn of the political parties and some Ministers of the Parliament has enabled them to form a new government and become ruler. This unprecedented event has drawn mixed reactions from the people. Right after the Perikatan Nasional (PN) became the government, a total of 27 civil society civil associations condemned the move to form a backdoor government. What was even more surprising was that the current Prime Minister (PN) and his cabinet resigned only after 17 months in power. Therefore, this study aimed to investigate the perception of the public in Kuching, Sarawak towards the PN's governance during the pandemic COVID-19. **Methods:** A correlational study was undertaken to explore the dimension of public perception of trust, COVID-19 management, and leadership in influencing the confidence towards the current ruling government. A total of 190 respondents participated in a survey distributed using convenience sampling through Google Form. **Results:** The responses were gathered from 130 registered voters against 60 unregistered voters. All variables showed very good internal consistencies for the items in each variable. It was found that the confidence level of the residents was at the moderate level and trust, COVID-19 management and leadership were confirmed to be the factors for public perception towards the current ruling government. All variables were positively correlated with the confidence level and leadership having the strongest correlation, followed by trust and COVID-19 management. **Conclusion:** This study concluded that the majority of the Kuching residents agree that trust, COVID-19 management and leadership contribute to the confidence level towards the current ruling government.

A COMPARATIVE LEGAL STUDY ON MANDATORY VACCINATION LAW FOR CHILDREN IN MALAYSIA AND THE SELECTED EUROPEAN COUNTRIES

Khairunnisa Binti Azman¹, Ibtisam @ Ilyana Ilias²

1. Faculty of Law, Universiti Teknologi MARA, Shah Alam Campus, Selangor, Malaysia.

Email: khairunnisaazman@yahoo.com

2. Faculty of Law, Universiti Teknologi MARA, Shah Alam Campus, Selangor, Malaysia.

Email: ilyanailias@uitm.edu.my

Introduction: In Malaysia, the outbreaks of infectious diseases affecting children are partially a reflection of declining vaccination uptake secondary to vaccine-hesitancy, anti-vaccination propaganda and more. Numerous countries have implemented mandatory vaccinations to protect their citizens when vaccination coverage is inadequate, yet Malaysia remains lacking of any such legislation. Besides, Malaysia is also legally unprepared from the legal standpoint to deal with childhood vaccination programs for curbing the existing and re-emerging infectious diseases affecting the children and protecting public health. In determining whether to mandate vaccination for children demands detailed information on the threats, including the severity of the disease, vaccine effectiveness and safety, a comparative review of the alternatives, and the degree of compulsion inherent with each. **Methods:** This study employs doctrinal legal analysis—comparative legal research—to review and examine laws and guidelines regulating vaccination for children in Malaysia and the selected European countries to develop a proposal and recommendations for the introduction of mandatory vaccination laws for children in Malaysia. **Results:** Numerous European countries have amended their vaccination policies, adopting or expanding mandatory vaccination requisites, where individuals or their children are obligated to be vaccinated. The scope of mandatory vaccination policies implemented in the countries is broad, varying from permissive to punitive. The comparative review provides better insight into how a mandatory vaccination law should be incorporated into existing Malaysian law to safeguard public health against infectious diseases. Comparatively, Malaysia lacks specific legislation relating to vaccines and vaccinations for children. Other pertinent existing laws and statutes are applicable and can be amended further to address existing legal gaps. **Conclusions:** If Malaysia is to develop a legal framework for mandatory vaccination for children, reference could be made to existing legislation in other nations. Some aspects could be amended to accommodate the Malaysian local context and residents with the caveat.

**THE IMPACT OF HEALTHCARE EXPENDITURE ON ECONOMIC GROWTH DURING
COVID-19 OUTBREAK : EVIDENCE FROM MALAYSIA**

Sabri Nayan^{1*}, Norsiah Kadir²

1. School of Economics, Finance and Banking (SEFB), College of Business, Universiti Utara Malaysia, Sintok, Kedah, Malaysia. Email: sabri.nayan@uum.edu.my
2. Faculty of Business and Management, Universiti Teknologi MARA, Perlis Branch, Arau Perlis, Malaysia.

Introduction: Malaysia's healthcare expenditure has been steadily increasing from 4.2 per cent of Gross Domestic Product (GDP) in 2016 to 4.7 percent of GDP in 2020. This figure reaches approximately 5 percent of the GDP or RM72.7 billion in 2021. According to the 2022 budget, healthcare would receive RM32.4 billion. The Covid-19 pandemic has put a strain on healthcare worldwide, including in Malaysia. RM 4 billion allotted specially for the handling of Covid-19 and also be utilized to improve general public health. Does this mean Malaysia has been under investing in the healthcare sector over the last decade? In this regard, the main motivation of this paper is to investigate the impact of healthcare expenditure on economic growth to ensure that it can address future challenges to safeguard the wellbeing of the people. **Methods:** In examining the presence as well as direction of causality between healthcare expenditure and economic growth, cointegration tests based on Johansen and Juselius are utilized. **Results:** Findings of the study indicate that there is a significantly cointegrated relationship between healthcare expenditure and economic growth in Malaysia. In addition, Covid-19 Pandemic significantly give negative impact on economic growth in Malaysia. **Conclusion:** Findings of the study can provide relevant information to assist policy-makers in implementation of the healthcare reform programmes in Malaysia. The efforts to reform healthcare should focus on controlling costs and making it accessible to everyone.

STIGMASTEROL ATTENUATES INFLAMMATORY HYPERALGESIA IN MICE

Mizaton Hazizul Hasan, Abdul Hanan Ramli, Azy Nazari, Muhammad Ariff Haris

Faculty of Pharmacy, Universiti Teknologi MARA, Puncak Alam Campus, Selangor, Malaysia. Email: mizaton_hazizul@uitm.edu.my

Introduction: Stigmasterol is a plant sterol that can be found in various parts of plants. Based on previous studies, many plant extracts have anti-osteoarthritic, anti-hypercholesterolemic and anti-inflammatory activities, which may be due to the presence of stigmasterol. Stigmasterol has been shown to possess anti-inflammatory activity and one of the cardinal features of inflammation is that normally innocuous stimuli produce pain. **Aim:** This study was carried out to investigate the analgesic effect of stigmasterol by using various pain models. **Methods:** The pain models used in this study were tail immersion test, formalin-induced inflammation test and acetic acid-induced writhing test. Male ICR mice were treated with stigmasterol (10, 20 and 40 mg/kg; p.o.). Morphine (5 mg/kg; i.p.) was given as positive control for the tail immersion test and indomethacin (10 mg/kg; p.o.) were given for the other two tests. **Results:** For the tail immersion test, mice treated with stigmasterol (10, 20 and 40 mg/kg, p.o.) and morphine (5 mg/kg, i.p.) had a significant ($p < 0.05$) pain inhibition, 60 minutes after treatment compared to control (10% Tween 80). As for the formalin-induced inflammation and acetic acid writhing tests, stigmasterol (40 mg/kg) and indomethacin (10 mg/kg) showed significant differences ($P < 0.05$) compared to control mice. The findings from this study revealed that stigmasterol has an analgesic effect as potent as morphine and indomethacin. The ability of stigmasterol to alleviate pain may be due to its ability to bind to opioid receptors at the central nervous system and causes the inhibition of thermal pain transmission. Also, stigmasterol can inhibit the inflammatory mediators (histamine, serotonin, prostaglandin and bradykinin) that are present in the late phase of inflammation which stimulate the nociceptive endings. **Conclusion:** Stigmasterol has central- and peripheral-acting analgesic activities that have the potential to be further developed as an adjunct to relieve pain.

A SINGLE-SUBJECT RESEARCH DESIGN INVESTIGATING THE IMPACT OF STRUCTURED FULL ONLINE LEARNING ON LEARNERS' SATISFACTION

Muhammad Hibatullah Romli^{1*}, Farahiyah Wan Yunus², Kim Lam Soh³, Chan Choong Foong⁴

1. Department of Rehabilitation Medicine, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Serdang, Selangor, Malaysia. Email: hibatullah.romli@gmail.com
2. Centre for Rehabilitation and Special Needs Studies, Occupational Therapy Programme, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia.
3. Department of Nursing, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Serdang, Selangor, Malaysia.
4. Medical Research and Development Unit (MERDU), Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia.

Introduction: COVID-19 pandemic drastically altered the health professions education. The learners and educators need to shift from conventional teaching and learning activities into full online learning. However, this transition happens without adequate preparation and creates dissatisfaction. This issue is shared internationally, especially among developing and less developed countries. However, this is also not investigated in nursing education. A contingency and remediation action is required to ensure a conducive learning experience can be provided during this emergency. **Methods:** A single-subject research design with alternate phases is conducted with a class of nursing students. Four weeks of teaching are selected by alternating the weeks with the control and experiment phase. The control phase consists of a didactic lecture with multimedia use, but class interaction is minimal. The experiment phase involved more active learning—including the use of multimedia didactic lecture, games, polling/quiz application, well-being education, student-centred learning (e.g., reflection sharing, discussion), and in-class prompt feedback. All the classes were conducted online via teleconference application while the students stayed at their homes. The Student Satisfaction with Online Learning questionnaire was administered to the students every week. **Results:** The whole class participated in the study. Visual analysis on the plot graph appeared the experiment phases had higher satisfaction levels than the control phases. **Conclusion:** Properly planned online learning with various learning activities contributes better satisfaction to learners. COVID-19 has accelerated the process for health professions education to embrace online learning as a mainstream practice. Online learning is gradually accepted; therefore, learners and educators need to prepare to embrace the Industrial Revolution 4.0 and Internet of Things and this study may become the catalyst for such effort.

AN INNOVATION OF OCCUPATIONAL THERAPY CLINICAL PLACEMENT DURING THE COVID-19 PANDEMIC

Farahiyah Wan Yunus^{1*}, Muhammad Hibatullah Romli^{2,3,4}, Hanif Farhan Mohd Rasdi¹, Dzalani Harun¹, Masne Kadar¹

1. Centre for Rehabilitation and Special Needs Studies, Occupational Therapy Programme. Faculty of Health Sciences. Universiti Kebangsaan Malaysia. Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia. Email: farahiyahwanyunus@ukm.edu.my
2. Department of Rehabilitation Medicine, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia (UPM), 43400 Serdang Selangor, Malaysia
3. Universiti Putra Malaysia Teaching Hospital, 43400 Serdang, Selangor, Malaysia.
4. Malaysian Research Institute on Ageing (MyAgeingTM), 43400 Serdang, Selangor, Malaysia.

Introduction: The COVID-19 pandemic has drastically altered health professions education. This resulted in an in-home quarantine, and educational activities were shifted to online and compromising clinical placement. Professional bodies were called for health professions education to utilize e-learning. The World Federation of Occupational Therapists permitted relevant adjustments for clinical learning. **Methods:** Educationists at one public institution innovate clinical learning via online and remote learning for five weeks. A total of 17 undergraduates undergoing mental health clinical placement were divided into four groups. Week-1 and week-2 involve team-based learning conducted fully online using discussions on real case studies, role play on history taking, demonstrating assessments and presenting potential interventions. Week-3 implemented problem-based learning on the recorded clinical scenarios. Week-4 and week-5 involved collaborative learning; half attended onsite clinical placement with real clients at the institution's OT-Clinic, paired with off-site students via teleconference using the Microsoft Team application. A mixed-methods approach was used. Every week, the students provided group reflective writing and individual self-administer on System Usability Scale and e-learning preference level. The student's final mark is compared with the past cohort who attended conventional clinical placement. **Results:** Multi-factorial repeated-measures ANOVA indicates no significant difference between onsite and online clinical learning students, either on SUS or e-learning preference. Qualitative outcomes show positive towards this innovative approach where online activities have minimal restriction on the learning process. Other learning approaches were found beneficial in improving themselves better due to immediate feedback and guidance from the lecturer and clinicians. However, the majority of the students prefer hands-on clinical due to real experience in managing clients. Interestingly, the current cohort gained a better final mark than the previous cohort, which is statistically significant. **Conclusion:** This innovative approach is acceptable for substituting conventional clinical learning during this restricted situation.

GSK3B INHIBITOR K-167 INHIBITS IL-6 SECRETION AND PLATELET AGGREGATION DURING INFLAMMATION

E. Othman, V.S. Sirotenko, D.A. Babkov, V.G. Klochkov

Department of Pharmacology and Bioinformatics, Volgograd State Medical University, Russia.
elias.othman89@gmail.com

Introduction: Immuno-coagulation is a phenomenon of increasing clinical importance, characterized by coagulopathies triggered by the activation of immune cells. GSK3B is involved in both inflammatory signalling and platelet activation. **Aims:** To evaluate GSK3B inhibitor K-167 as a therapeutic agent against excessive cytokine production and platelet aggregation during LPS challenge. **Methods:** Peritoneal macrophages were isolated from male mice. After stimulation with 100 ng/ml LPS for 24 hours NO in supernatants was determined using a standard Griess reagent. The concentration of IL-6 was determined with ELISA kit. Cell viability was monitored as LDH activity in a cell culture medium. Functional activity of platelets was determined on a analyser of platelet aggregation BIOLA-220 LA. To prepare PRP venous blood was taken from the ear marginal vein of a rabbit, stabilized with a 3.8% sodium citrate solution. PRP and a solution of the test compound at a concentration of 100 μM were sequentially introduced into the cell of the aggregometer. To induce aggregation ADP and collagen at a concentration of 5 μM and 4 mcg/ml respectively, was added to the cuvette. ASA was used as a reference drug. Statistical analysis was performed using GraphPad Prism 8.0. **Results:** We found that K-167 inhibits LPS-induced NO synthesis and IL-6 secretion with IC_{50} of 13.9 μM and 22.4 μM , respectively, with no significant cytotoxicity. ASA blocked platelet aggregation and the IC_{50} value was 81 μM . Compound K-167 showed superior antiplatelet activity inhibiting platelet aggregation and had IC_{50} of 7.9 μM . **Conclusion:** The results showed that inhibition of GSK3B with compound K-167 is a viable approach to tackle proinflammatory cytokine overproduction in a cellular model. Antiplatelet activity of compound K-167 exceeded that of ASA by more than 10 times. These findings may guide further development of protective agents for complications of severe infections, including COVID-19

NOVEL QUINAZOLINE NHE-1 INHIBITOR SUPPRESSES IL-6 SECRETION AND PROTECTS FROM LPS-INDUCED ACUTE LUNG INJURY

Vladlen Klochkov, Elena Sokolova, Alexander Borisov, Yulia Velikorodnaya, Denis Babkov, Alexander Ozerov

Volgograd State Medical University
Klochkovvladlen@gmail.com

Introduction: The Na⁺/H⁺ exchanger isoform 1 (NHE-1) inhibitors attract attention as agents with cytoprotective, anti-ischemic, and anti-inflammatory effects. In our previous studies, we identified a potent NHE-1 inhibitor compound VMA-21-10. **Aims:** To evaluate anti-inflammatory properties of small molecule NHE-1 inhibitor VMA-21-10 during LPS challenge *in vitro* and *in vivo*. **Methods:** Peritoneal macrophages were isolated from male C57bl/6j mice. Cells were cultured in DMEM (Gibco) supplemented with 2 mM L-glutamine (Gibco), 10% FBS (BioClot, Germany), 100 U/ml penicillin and 100 mg/ml streptomycin. After stimulation with 100 ng/ml *E. coli* O127:B8 LPS for 24 hours nitric oxide (NO) in supernatants was determined using a standard Griess reagent. The concentration of IL-6 was determined with the ELISA kit (Cloud-clone). Cell viability was monitored as lactate dehydrogenase (LDH) activity in a cell culture medium. *In vivo* studies were performed on C57bl/6j mice in the LPS-induced acute lung injury model (LPS-ALI). The concentration of IL-6 in blood and broncho-alveolar lavage samples was determined as described earlier. **Results:** We found that VMA-21-10 inhibits LPS-induced NO synthesis and IL-6 secretion with IC₅₀ of 72.9 μM and 51.7 μM, respectively, with no significant cytotoxicity up to 100 μM. Administration of 50 mg/kg VMA-21-10 significantly ameliorated IL-6 levels, vascular integrity and tissue damage in the LPS-ALI model. **Conclusion:** We have shown that NHE-1 inhibitor VMA-21-10 prevents proinflammatory cytokine overproduction in cellular and animal models. These findings may guide further development of protective agents for severe infections, including COVID-19.

**SPONTANEOUS RETROPERITONEAL HAEMORRHAGE SECONDARY TO
ANTICOAGULANT THERAPY IN COVID PATIENT WITH PULMONARY EMBOLISM :
CASE REPORT**

KV Dinesh^{1,2}, Prehmanraj³, Wan Mokhzani Wan Mokhter², Nil Amri³

1. Department of Surgery, School of Medical Sciences, Universiti Sains Malaysia, Health Campus, Kubang Kerian, Kota Bahru, Malaysia.
Email: drdineshkv@gmail.com
2. Hospital Universiti Sains Malaysia, Kubang Kerian, Kota Bahru, Malaysia
3. Department of Surgery, Hospital Sultanah Bahiyah, Alor Setar, Kedah

Introduction: Spontaneous retroperitoneal haemorrhage (SRH), also known as the Wunderlich syndrome is a rare life-threatening event characterized by sudden onset bleeding into the retroperitoneal space without associated trauma or iatrogenic manipulation. The exact etiology for SRH remains unclear but documented cases include patients with underlying bleeding disorder, malignancy and patients on anticoagulant therapy. Anticoagulant therapy is considered lifesaving in patients with thrombo-embolic phenomenon. Its application in clinical practice must always be weighed against possible life-threatening complications such as spontaneous bleeding tendencies.

Case Report: A 69-year-old lady with underlying hypertension and diabetes diagnosed with category 5 COVID infection complicated with acute pulmonary embolism (PE). Anticoagulant therapy was initiated for the PE. She developed SRH after 3 days of the anticoagulant therapy. **Conclusion:** SRH is a rare life-threatening condition which requires immediate diagnosis and management. Most cases can be managed conservatively. In certain situations, image-guided drainage may be indicated. Rarely does it require surgery to achieve hemostasis. Therefore, in patients with unexplained drop in hemoglobin, SRH should be taken into consideration after ruling out other common causes of blood loss.

Keywords: Spontaneous Retroperitoneal Haemorrhage, COVID-19, anti-coagulant

UNMASKING THE COVID-19 PANDEMIC'S IMPACT ON FACEMASKS WASTE DISPOSAL IN MALAYSIA

Siti Hafsyah Idris, Nur Nabiila Masfuzah Abdullah*, Rasyidah Abdul Rahman, Norliana Ramli, Khairunnisa Azman

Faculty of Law, UITM.

Email: [*belnawhen@gmail.com](mailto:belnawhen@gmail.com)

Introduction: Globally, the ongoing COVID-19 pandemic has resulted in a massive increase in the consumption of single-use face masks used for personal protective equipment (PPE) to prevent virus transmission. However, improper management of such materials poses a new form of plastic pollution to the sustainability of the environment. Furthermore, standardisation, procedures, guidelines, and strict implementation of facemasks management concerning COVID-19, community habitats, and public areas should be carefully considered to mitigate pandemic risks in transmitting the virus. **Aims:** This study investigates the public's awareness, particularly amongst the immigrant workers, on the methods of facemasks disposal during the pandemic to educate foreigners or immigrants in addressing the negative environmental impact of waste disposal. **Methods:** Structured interviews were conducted with 6 participants, and structured literature reviews. **Results:** Our analysis showed that users' behaviour concerning the use and management of facemasks has a significant impact on environmental impacts. The improper disposal of face masks is due to a lack of knowledge and awareness. Thus, changing public attitudes toward using and disposing of plastic waste, such as facemasks and installing efficient and functional waste management facilities in urban areas, will help reduce plastic waste during the pandemic and afterwards. **Conclusion:** We conclude that proper facemasks disposal effectively controls infection sources as well as ensure environmental sustainability

7.3 MB *DE NOVO* TERMINAL MICRODELETION OF CHROMOSOME 18 IN A BOY WITH FEW FEATURES OF TYPICAL 18Q- DELETION SYNDROME

Fadly Ahid^{1*}, Azli Ismail², Zubaidah Zakaria²

1. Centre for Medical Laboratory Technology Studies, Faculty of Health Sciences, Universiti Teknologi MARA Selangor Branch, Puncak Alam Campus, Selangor, Malaysia. Email: fadlyahid@uitm.edu.my
2. Haematology Unit, Institute for Medical Research, National Institutes of Health, Ministry of Health Malaysia, Setia Alam, Selangor, Malaysia.

Introduction: The phenotype of patients with 18q- syndrome can be highly variable ranging from almost normal to severe malformations and intellectual disability. Here we report a 16-year-old boy, a product of a non-consanguineous marriage, who presented with intellectual disability, facial dysmorphism, high arched palate, congenital talipes equinovarus (clubfoot), congenital scoliosis, congenital heart defect and behavioural problems. **Methods:** Array-based comparative genomic hybridization (array-CGH) was performed using commercially available high resolution 244K 60-mer oligonucleotide microarray slide according to the manufacturer's protocol. This platform allows genome-wide survey and molecular profiling of genomic aberrations with an average resolution of about 10 kb. In addition, multiplex ligation-dependent probe amplification (MLPA) analysis was carried out using SALSA MLPA kit P320 Telomere-13 to confirm the array-CGH finding. **Results:** Array-CGH analysis revealed a 7.3 Mb terminal deletion involving chromosome band 18q22.3-qter. This finding was confirmed by MLPA where a deletion of 10 probes mapping to the 18q22.3-q23 region was detected, and further MLPA analysis on his parents showed the deletion to be *de novo*. **Conclusion:** To the best of our knowledge, this is the first report of a Malaysian individual with 18q-terminal microdeletion diagnosed with microarray technology, and this report expands the phenotypic spectrum of the 18q- deletion syndrome by adding malformations to the literature.

PERCEPTION OF ACADEMIC STRESS DUE TO ONLINE LEARNING AND THE COPING STRATEGIES AMONG UNIVERSITY STUDENTS DURING THE COVID-19 PANDEMIC

Noor Hazarina Nordin^{1*}, Nor Haslin Nazatul Atirah Che Husin¹, Wan Khairina Wan Kamarulisham¹, Nik Zarif Irfan Nik Mohd Hasanuddin¹

1. Faculty of Pharmacy, Universiti Teknologi MARA, Cawangan Pulau Pinang, Kampus Bertam, 13200 Kepala Batas, Pulau Pinang. Email: noorhazarina046@uitm.edu.my

Introduction: Academic stress has long been recognised as a critical issue in educational settings. Unfortunately, COVID-19's current predicament is causing students to become more stressed due to the abrupt transition from a physical classroom to a virtual environment. The aim of this study was to assess the perception of academic stress due to online learning and the coping strategies among university students during the COVID-19 pandemic. Moreover, the relationship between academic stress, emotional intelligence, and selected demographic characteristics were also explored. **Methods:** A quantitative, cross-sectional study was conducted using the convenience sampling method. An anonymous self-administered questionnaire was conducted online to assess Socio-demographic characteristics, Perceptions of Academic Stress Scale (PAS), and Emotional Intelligence Scale (EIS). Data were analysed using descriptive and inferential statistics. **Results:** Overall, students had a moderate level of academic stress and a high level of emotional intelligence. Academic stress experienced by students was significantly due to the academic workload and course assessments. Further, self-motivation and empathy were the coping strategies most often used by students to overcome academic stress. Academic stress was moderately associated with emotional intelligence. Academic stress and emotional intelligence significantly showed a strong to moderate relationship with both online learning and college learning environments satisfaction. Additionally, both gender and pre-existing psychological disorders showed no relationship with neither academic stress nor emotional intelligence. **Conclusion:** This study indicated that the COVID-19 pandemic has a significant impact on students' academic stress. Further, the findings showed that most students have the ability to overcome the challenges in online learning by developing their own stress management strategies to cope with the consequences caused by the pandemic. This study may benefit the educational institution by providing some insight into how to tackle the main obstacles of online learning that currently is the only option during the COVID-19 pandemic.

COVID-19 INFECTION PRESENTING AS INTUSSUSCEPTION IN INFANTS: A CASE REPORT

*Ooi Jie Soang^{1,2}, Mohd Shahrulsalam Mohd Shah^{1,2}

1. Department of Surgery, School of Medical Sciences, Universiti Sains Malaysia Health Campus, Kota Bharu, Kelantan, Malaysia
2. Hospital Universiti Sains Malaysia, Kota Bharu, Kelantan, Malaysia
Email: jsoang90@gmail.com

Introduction: Intussusception as the presenting symptom for Covid-19 paediatric is very rare. There was only a total of 5 cases of intussusception reported as a presentation of Covid-19 for paediatric patients worldwide from January till July 2020. We present a case of intussusception in a 7 months old boy with Covid-19 infection. **Case presentation:** A 7 months old boy, born at term with uneventful postnatal history, presented with fever for 2 days, associated with abdominal distension and multiple episodes of vomiting for 2 days. He also had no bowel output for the past 2 days and did not pass flatus for the past 1 day. Otherwise, he did not have any upper respiratory tract infection symptoms and there was no history of close contact to Covid-19 patients. The abdomen was distended with fullness and tenderness over the right iliac fossa on examination. Bowel sound was sluggish. On the digital rectal examination (DRE), there was red currant jelly stool. In view of fever, covid PCR test was performed and it is positive. Abdomen x ray revealed a dilated small bowel. Ultrasound abdomen was inconclusive. Contrast-enhanced CT(CECT) scan of the abdomen was performed, and it showed long segment ileocolic intussusception. Hydrostatic reduction under ultrasound guidance was attempted but failed. Thus, the child underwent exploratory laparotomy, distal ileum resection and primary end to end anastomosis and appendectomy. Intra-operatively, there was long segment ileocolic intussusception and 4 sessile polyps over distal ileum with multiple mesenteric lymph nodes. Histopathological report revealed lymphoid hyperplasia with no true polyp structure seen. Post operatively, the patient recovered well and discharged home uneventfully. **Conclusion:** Children with Covid-19 infection can be presented with intussusception, but it is not common. Thus, intussusception should be one of the alarming differential diagnoses for paediatric patients with Covid-19 infection that presented with gastrointestinal symptoms.

POST COVID-19 ORGANIZING PNEUMONIA WITH ACUTE PULMONARY EMBOLISM AND POSSIBLE PULMONARY ASPERGILLOSIS: A CASE REPORT

Aimi Khairuddin^{1,3}, Nik Haszroel Hysham Nik Hashim^{1,2*}

1. Department of Medical Microbiology & Parasitology, School of Medical Sciences, Universiti Sains Malaysia. Email: haszroel@usm.my
2. Hospital Universiti Sains Malaysia.
3. Hospital Raja Perempuan Zainab II.

Introduction: Pulmonary thromboembolism and fungal superinfection following COVID-19 infection are conditions that can lead to an increase in morbidity and mortality. **Case report:** A 41-year-old male, with underlying insulin-dependent type 2 diabetes mellitus was admitted in June 2021 with cough, fever, and anosmia for more than one week. He was admitted to the intensive care unit (ICU) and treated as COVID-19 category 4. He was discharged well on day- 22 of COVID-19 infection. The patient was readmitted 2-weeks after that due to worsening clinical condition and hypoxemia. Respiratory examination revealed bilateral lung crepitations up to the mid-zone. Laboratory tests showed an elevated white blood cell count (WBC) of 8.68×10^9 g/L with 57.5% neutrophils. C-reactive protein (CRP) was elevated at 66.6 mg/L. Chest radiograph revealed ground-glass opacities and blunted costophrenic angle in the lower zones bilaterally (Figure 1). He was diagnosed with hospital-acquired pneumonia. His condition deteriorated on day 4 of ICU admission, requiring mechanical ventilation. Antibiotic therapy was escalated from piperacillin-tazobactam to meropenem. He was empirically treated as COVID-19 associated pulmonary aspergillosis (CAPA) and was started on anidulafungin. Urgent CT pulmonary angiography and high-resolution computed tomography revealed evidence of pulmonary artery thrombus and organizing pneumonia. He was given intravenous heparin infusion for pulmonary embolism. The patient responded well and was extubated. The patient was discharged well after 21 days of hospitalization, with oral prednisolone and warfarin. **Conclusion:** It is important to follow-up COVID-19 patients after discharge as some of the complications of COVID-19 appear later.

FABRICATION OF HYDROXYCHLOROQUINE THROUGH INHALATION FOR SEVERE ACUTE RESPIRATORY SYNDROME CORONAVIRUS 2 (SARS-COV-2): A SYSTEMATIC REVIEW

Zaini NS*¹, Jaapar KH^{1,3}, Rawi AF^{1,3}, Hamid K², Mohamed NAH¹

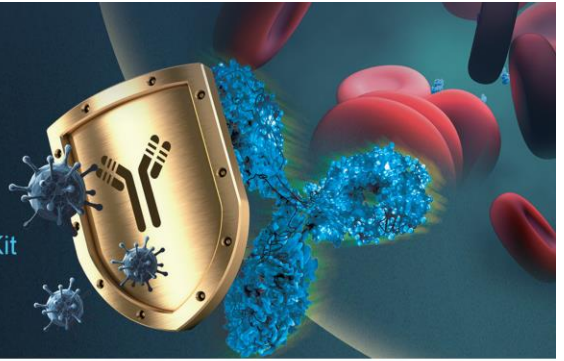
1. Faculty of Dentistry, Universiti Teknologi MARA, Sg. Buloh Campus, Selangor, Malaysia. Email: 2021255014@student.uitm.edu.my
2. Faculty of Pharmacy, Universiti Teknologi MARA, Puncak Alam Campus, Selangor, Malaysia.
3. University of Nottingham Malaysia Campus, Jalan Broga 43500 Semenyih, Selangor, Malaysia.

Introduction: Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) caught the global attention, where it leads to the coronavirus disease 2019 (COVID-19) pandemic. Hydroxychloroquine (HCQ) is an antimalarial drug and considered as a potential medicament for treating SARS-CoV-2 infection. HCQ especially as an aerosol application will prevent or at least markedly reduce the replication rate of the SARS-CoV-2 virus in the early phase of the infection. However, the method of fabrications for the delivery of HCQ via inhalation could also impacted the encapsulation efficiency of HCQ. This systematic review aimed to rule out the fabrication method of HCQ through inhalation. **Methods:** The manuscript selection was based on the inclusion criteria and only articles published in English and containing keywords in the title or in the abstract were selected. The data were gathered by searching in Scopus, Web of Science, and EBSCO from 2018 until recently. Three investigators assessed the quality of the studies. **Results:** Data from all three search engines were obtained with 36 from Scopus, 45 from Web of Science and 63 from EBSCO. Fabrication of HCQ via inhalation was compared with the standard usage of HCQ through oral administration, method of fabrications of the HCQ inhalation were further identified, safety of HCQ in the treatment of COVID 19 and the adverse effects. The study found HCQ are mostly given through oral administration however did not impact disease progression but resulted in a higher risk of adverse effects Fabrication for inhalation delivery include the nanocellulose, nanoparticles via spray drying technique and microparticles through the solvent evaporation technique. **Conclusion:** This study revealed that HCQ through oral administration might possibly lead to intolerable, unsafe, and not efficacious in the management of COVID-19. HCQ via inhalation route might be delivered through liposomes, jet milled and nebulized solution.

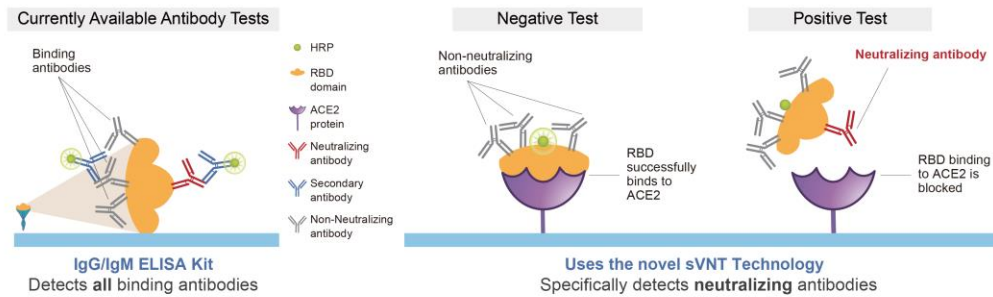
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**Based on external lab test conducted in India, 2017.
*Based on NielsenIQ unit sales for the Skin Cleansing category (latest 12 months available)
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