FACULTY OF MEDICINE
ROYAL COLLEGE OF MEDICINE PERAK

INTERNATIONAL CONFERENCE ON INTEGRATIVE PHYSIOLOGY AND MOLECULAR MEDICINE

"Health and Disease: The Integration of Physiological Instruments and Molecular Techniques"

27-29 February 2024 | Casuarina@Meru, Ipoh Perak, Malaysia

ORGANISED BY

CENTRE FOR INTEGRATIVE PHYSIOLOGY AND MOLECULAR MEDICINE
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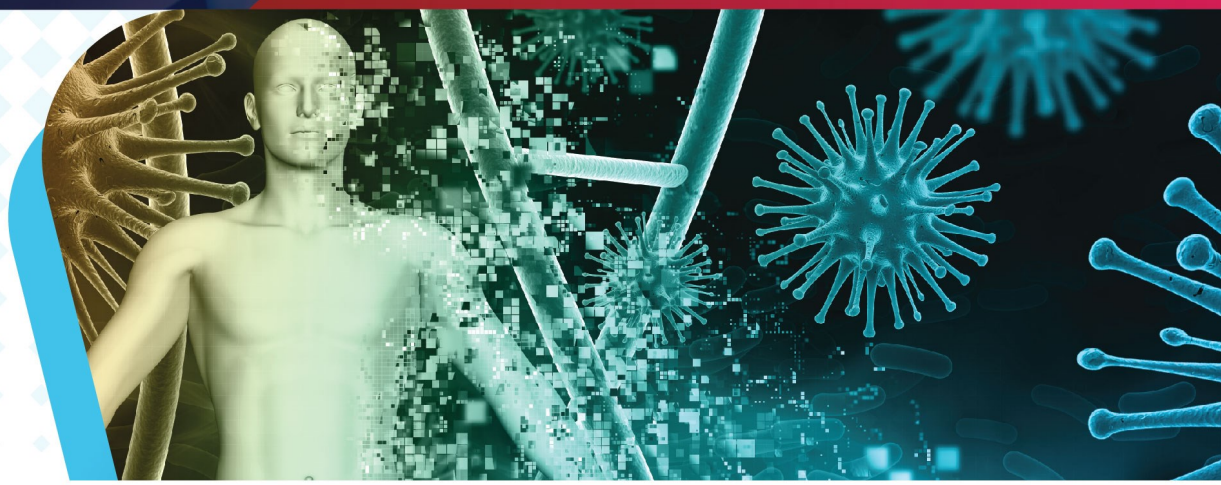

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FOREWORD FROM THE PRESIDENT
UNIVERSITI KUALA LUMPUR, MALAYSIA

Bismillahirrahmanirrahim

In the Name of Allah, Most Gracious and Most Merciful

I am honoured to welcome all distinguished guest, eminent speakers, and valued participants to the 1st International Conference on Integrative Physiology and Molecular Medicine. Congratulation to the Faculty of Medicine and the Cluster for Integrative Physiology and Molecular Medicine for organising this conference. It is undeniable that in research or in any fields, everyone must work in a team, to collaborate with different minds, different expertise, different skills, to create excellence. And the organisation of event such as this, is vital for groups from various fields of research and expertise to come together and share their knowledge and experience.

So again, congratulation to everyone who has made this 1st International Conference on Integrative Physiology and Molecular Medicine, event possible. I am proud that you have gathers researchers/ academicians from various fields of medical research and the pure sciences; and the medical practitioners who are not only involved in the frontier of research but brings with them their expertise to the people out there. I hope this will be the beginning of a great conference and I certainly expect to see more of such event from the organiser in future.

Lastly, I hope that when you all leave this event, you will leave it with friendships forged, network formed, mind enlightened and a boost of motivations to your research endeavours.

Thank you and welcome.

YBHG. ASSOC. PROF. IR. DR. AZMAN BIN SENIN
President/Chief Executive Officer
Universiti Kuala Lumpur

MESSAGE FROM THE HEAD OF CAMPUS
UNIVERSITI KUALA LUMPUR ROYAL COLLEGE OF MEDICINE PERAK
PERAK, MALAYSIA

Dear Esteemed Guests, Speakers, and Attendees,

Welcome to Ipoh, Perak, the once booming mining town in Malaysia and recently listed as the 6th best place to visit in Asia; and Universiti Kuala Lumpur Royal College of Medicine Perak, is proud to stand right here in the city.

As the Head of Campus of Universiti Kuala Lumpur Royal College of Medicine Perak, it is my hope to see more activities such as this organised by the academics and scholars in our campus. We must do more to engage in scholarly activities such as this, to promote collaboration and networking, as well as the exchange of ideas in academic and research. Therefore, it is my hope, that this conference is the beginning of more to come.

On behalf of Universiti Kuala Lumpur Royal College of Medicine Perak, I would like to welcome everyone to this 1st International Conference of Integrative Physiology and Molecular Medicine. Welcome to our guest from as far as the United Kingdom, India, and Indonesia. Thank you for taking the time to be at this event, to not just share your knowledge, but in doing so, to give support to the team behind the organisation of this event.

It is good to know that this event, despite being its first, have managed to gather a significant number of distinguish clinicians, academics, scholars, and researchers in various fields of medicine and medical engineering technologies. Such a gathering would definitely lead to an exciting sharing and exchange of knowledge, experience, and ideas.

So, congratulations everyone! I hope you will have an experience that will lead to greater findings and add to your research network; and I hope this will lead to more networking between us and other institutions in the future.

Thank you,

Hisshamuddin Omar
Chief Executive Officer & Head of Campus
Universiti Kuala Lumpur Royal College of Medicine Perak
Malaysia

FOREWORD FROM THE DEAN OF FACULTY OF MEDICINE
UNIVERSITI KUALALUMPUR ROYAL COLLEGE OF MEDICINE PERAK
PERAK, MALAYSIA

Dear Honoured Guests, Distinguished Speakers, and Participants,

Welcome everyone to the 1st International Conference on Integrative Physiology and Molecular Medicine.

Congratulations to the team that make this happen. I am aware that everyone has work tirelessly in the months leading to this day. Thank you for accepting the challenge to organise this event. As academics and scientist, engagement in scholarly activities such as this is important to promote collaboration and networking, as well as the exchange of ideas in academic and research. Therefore, it is my hope, that this conference will be a permanent fixture in our biennial calendar.

I would also like to offer our gratitude, to Prof Dr Dina Keumala Sari, School of Medicine, Universitas Sumatera Utara, Indonesia, for lending a huge support to this conference. I am aware that Prof Dina has brought a huge team of various expertise with her to this conference. I would also like to thank the invited guest and invited speakers for lending their support to the organisation of this conference.

For this 1st International Conference on Integrative Physiology and Molecular Medicine, the theme "Health and disease: the integration of physiological tools and molecular techniques" is most profound. Indeed, we live in an exciting time in the field of medicine and health science research. The measurable properties and function of the biological systems have allowed for the application of physiological tools in the study of human health, both in laboratory settings – involving either human or animal subjects – as well as in the healthcare settings.

Thank you and welcome everyone. I hope this gathering of academics, scientist and health workers will lead to an exciting and meaningful exchange of ideas.

Assoc. Prof. Dr. Syed Rahim Syed Hamid
Dean, Faculty of Medicine
Universiti Kuala Lumpur Royal College of Medicine Perak
Malaysia

FOREWORD FROM THE ORGANISING CHAIRMAN
UNIVERSITI KUALALUMPUR ROYAL COLLEGE OF MEDICINE PERAK
PERAK, MALAYSIA

Dear Esteemed Guests, Notable Speakers, and Respected Participants,

It is with great pleasure that I welcome everyone who is coming to this conference: our invited guests and speakers, the presenters, and participants. Thank you for joining us here at Casuarina@Meru, Ipoh, Perak. I am grateful for the honour given to us by our distinguished speakers, the plenary speakers, and the invited speakers. Thank you for accepting our invitation to come and share your knowledge, experience, and research findings with us.

I would like to express my gratitude to our President, the President of Universiti Kuala Lumpur, the Head of Campus for Universiti Kuala Lumpur Royal College of Medicine Perak, and to our Dean, the Dean for the Faculty of Medicine, Universiti Kuala Lumpur Royal College of Medicine Perak. Thank you for your encouragement and support.

To my team members and to everyone in Universiti Kuala Lumour Royal College of Medicine Perak, who have lent us their support, I am indebted to you; without you, this conference will not materialise. I am also very lucky to have the support of our sponsors. Thank you for the monetary contributions as well as souvenirs for us to remind our guest and participants of the event that is happening here in Ipoh, Perak, Malaysia.

In our debut, with the theme, "Health and disease: the integration of physiological instrument and molecular techniques", we want to give tribute to all the research involved, directly or indirectly to the advancement of medicine and healthcare management: the research behind disease understanding, drug discovery, and disease management; and to the group who works on instruments for better research and patients' management: the technologist and engineers who work to improve the tools used in medical care.

Therefore, in this conference we will have speakers from different areas of research: medical scientist, the healthcare workers, clinicians, and medical engineers, among others. You will hear talks regarding fundamentals research in medical discoveries to patient engagement in case reports. These include reviews in the various aspect of patients care and disease management, and robotic technologies to assist in the healthcare setting.

Thank you again and welcome everyone. I hope this gathering will be an engaging and a meaningful time for us all.

Prof. Noorzaid bin Muhamad
Organising Chairman
CIPIMM, Universiti Kuala Lumpur Royal College of Medicine Perak
Malaysia

ABOUT THE CLUSTER...

CENTRE OF INTEGRATIVE PHYSIOLOGY AND MOLECULAR MEDICINE (CIPMM)

The cluster for integrative physiology and molecular medicine was proposed in 2017 with the aim to integrate the diverse research activities in the medical and technological science area in UniKL RCMP. This is to ensure connections and inter- and intradisciplinary collaborations between the various science disciplines. Therefore, the establishment of the "Centre of Integrative Physiology and Molecular Medicine (CIPMM)" would allow the various researches currently conducted in UniKL to be integrated and further developed.

The proposed research cluster is one of its kind in Malaysia where emphasis is given towards streamlining not just the medical science researches but also technological science researches into one goal of countering disease pathogenesis and uncovering new potentials in disease management. This strategy requires a collaborative effort between the various disciplines in medical and technological sciences to ensure that each step in a research endeavour would lead to a meaningful end in the advancement of disease management in humans.

Our strategy therefore is to strengthen and expand the various research in natural products that are currently being conducted. Our emphasis on locally sourced natural plants will ensure that any beneficial outcome would lead to an economic role of our own local plants. The knowledge of the various biochemical potential of these plants will be incorporated into studies on physiological functions to discover their potentials in drug discovery and subsequently disease management. Input from technological research will help in developing a better drug delivery system and treatment strategy. After all, it is the combination of medical sciences and technological sciences that has brought about better drug development and delivery mechanism as well as better treatment strategy for disease management.

The establishment of this Centre shall allow the researchers to work in a group instead of in isolation. This should provide a research environment in which the researches could share their knowledge and expertise for the advancement of any given research project.

Prof. Noorzaid bin Muhamad
CIPIMM, Universiti Kuala Lumpur Royal College of Medicine Perak
Malaysia

ORGANISING COMMITTEE

Prof. Noorzaid bin Muhamad (Chairman)
Dr Fazlin Zaini (Co-chairman)

Prof Padmavaty Khatamuthu Masilamani
Dr Rehanna Mansor
Dr Norain Ab. Latif
Dr Jannathul Firdous
Dr Ravindran Jaganathan
Dr Vignesh Ramachandran
Dr Sam Annie Jeyachristy
Dr Khairil Azwan Malim Jaafar
Pn Resni Mona
En Shaharul Affendi Shahruddin Kee
En Shamsul Azhar Abdullah
En Muhammad Nordian Kordi
En Nor Azizi Saad
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Cik Chin Pui See
Pn Rafiqah Abdullah
Pn Nurul Asyikin Zulkipli
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Pn Bahayaton Aziah Baharom
Pn. Nurbatdrieyna Busyera Binti Mohamad Sukri
Cik Nurfarisa Humaira Mohammad Nizar
Cik Sarina binti Hambali
En Muhammad Amir Saifuddin Mohd Zuhri
Art Performance Club, UniKL RCMP

Organising Committee – ICIPMM 2024

SCIENTIFIC PROGRAMME

INTERNATIONAL CONFERENCE ON INTEGRATIVE PHYSIOLOGY AND MOLECULAR MEDICINE: "Health and Disease: The Integration of Physiological Instruments and Molecular Techniques"

Day 1, 27 February 2024, Tuesday	
08:30 AM	**Registration of Participants**
08:45 AM	**Arrival of Distinguished Guests** **Doa recitation**
09:00 AM	**Chairperson: Prof. Dr. Noorzaid bin Muhamad** **Keynote Address 1** **YBhg. Prof. Dr. Kushsairy bin Abdul Kadir** Deputy President (Academic & Technology) Universiti Kuala Lumpur, Malaysia *Title: Advancement of Artificial Intelligence and Medicine*
10:00 AM	**Welcome Address** **YBrs. Prof. Dr Noorzaid bin Muhamad** Chairman, International Conference of Integrative Physiology and Molecular Medicine 2024 (ICIPMM – 2024) **Introductory Remarks** **YBrs. Assoc. Prof. Dr Syed Rahim bin Syed Hamid** Dean, Faculty of Medicine Universiti Kuala Lumpur Royal College of Medicine Perak **Officiating Speech** **YBhg. Prof. Dr. Kushsairy bin Abdul Kadir** Deputy President (Academic & Technology) Universiti Kuala Lumpur, Malaysia **Gimmick Presentation** **Montage Presentation** **Photo Opportunity**
10:45 AM	**BREAK & NETWORKING SESSION**
11:00 AM	**Session 1. Chairperson: Prof. Dr. Noorzaid bin Muhamad** **Keynote Address 2** **Prof. Alison Gartland,** University of Sheffield, UNITED KINGDOM *Title: The Musculoskeletal System in Health and Disease – a multidisciplinary approach to find better treatments for Musculoskeletal Diseases*

Day 1, 27 February 2024, Tuesday	
12:00 Noon	**Chairperson: Prof. Noorzaid bin Muhamad** **Plenary 1** **Prof. Dr Dina Keumala Sari**, Universitas Sumatera Utara, Indonesia Title: Regulation of Nutrient in Supporting Physiology Process of Exercise
01:00 PM	**LUNCH BREAK**
02:00 PM	**Session 2. Chairperson: Prof Dr Padmavathy Kathamuthu Masilamani** **Plenary 2** **Assistant Prof. Dr Rajalakshmi**, Holy Cross College, Tamil Nadu, INDIA Title: Natural compounds and derivatives as new drug candidates for endocrine and metabolic disorders – over one and a half decades **Speaker 1** **Dr Muhammad Zaki bin Ramli**, UniKL Royal College of Medicine Perak Title: Malaysian Lactic Acid Bacteria as Potential Neuraceutical-based Amyloid-β Inhibitors for Prevention of Alzheimers's Disease
03:15 PM	**BREAK and Poster Viewing**
03:45 PM	Parallel Sessions 3: Oral presentation **Session 3A. Chairperson: Dr Fazlin Zaini** Theme: Metabolic Disorders and Nutrition (OP-01 to OP- 07) **OP-01: Dr. Kogila Supramaniam** Level of emotional intelligence among chronic kidney disease patients' using MSCEIT **OP-02: Dr. Nurul Syahirah Ahmad Sayuti** Hepatotoxicity and hepatoprotectivity of *Christia vespertilionis (L.f.) Bakh. f.* leave ethanolic extract in oral gavage Sprague Dawley rats. **OP-03: Ms. Prema Subramaniam** Analysis of NT-PROBNP biomarker among pulmonary arterial hypertensive patients with ventricular and atrial septal defect **OP-04: Ms. Ammara Shaikh** The therapeutic potential of kelulut honey in mitigating the pathological changes in Alzheimer's disease in rat models **OP-05: Dr. Vita Camelia** Hypoglycaemia among chronic methamphetamine abuser after methamphetamine abstinence during rehabilitation in Medan City **OP-06: Prof. Dr. Dina Keumala Sari** Analysis of the antihyperlipidemia and antioxidant activity of red palm oil (*Elaeis guineensis*), Koja Bay leaves (*Murraya koenigii L Spreng*), and passion fruit seeds (*Passiflora edulis f. edulis Sims*) formulations in Sprague-Dawley rats. **OP-07: AP Dr. Yetty Machrina** Ethanol extract of Melinjo peel (*Gnetum gnemon*) protects the liver against hyperuricema-induced damage in experimental animal model

Day 1, 27 February 2024, Tuesday	
03:45 PM	**Parallel Sessions 3: Oral presentation** **Session 3B. Chairperson: Dr Ravindran Jaganathan** Theme: Biomedical Technology and Diagnostic Methods (OP-08 to OP- 14) **OP-08: Ms. Hasmawati Yahya** The role of modified nominal group technique (mNGT) in developing diabetic kidney disease mobile apps **OP-09: Prof. Dr. Dina Keumala Sari** Screening analysis of passion fruit seed ethanol extract and the antioxidant activity against 4-nitroquinoline-1-oxide induced tumour in Sprague-Dawley rats **OP-10: Dr. Eka Roina Megawati** Exploring the correlation between anthropometric variables, flexibility and agility in children **OP-11: Dr. Adristi Anargya** The assessment of performance matrix between individuals of ACE ID and ACE DD genotype after a 6-week endurance training **OP-12: Dr. Noor Akmar Nam** A comparative review of different salivary biomarkers detection by electrochemical biosensor in the diagnosis and monitoring of periodontal diseases **OP-13: Dr. Fairus Fariza Zainuddin** Time delay in anterior cruciate ligament reconstruction (ACLR) surgery and return to sports (RTS) after ACLR surgery **OP-14: Prof. Dr. Dewi Masyithah Darlan** Soil-transmitted helminth infection of native community in North Sumatera province, Indonesia: prevalence and risk factors assessment
05:00 PM	End of Day 1

Day 2, 28 February 2024, Wednesday	
08:00 AM	**Registration of Participants** **Montage Presentation**
08:30 AM	**Session 4. Chairperson: Dr Rehanna Mansor** **Plenary 3** **Prof. Dr Sharmili Vidyadaran**, Universiti Putra Malaysia, Malaysia Title: Microglia: distinct brain macrophages and their role in disease **Speaker 2** **Assoc. Professor Dr Satirah Zainalabidin**, Universiti Kebangsaan Malaysia Title: Elucidating S-allylcysteine Impact to the Heart Function and Vascular Reactivity in Estrogen-Deficiency Rats **Speaker 3** **Dr Muhammad Fauzi Daud**, Universiti Kuala Lumpur Institute of Medical Science Technology Title: Engineering Artificial Tissue through Innovative 3D cell culture model
10:00 AM	**BREAK & POSTER VIEWING**

Day 2, 28 February 2024, Wednesday	
10:30 AM	**Session 5. Chairperson: Dr Sam Annie Jeyachristy** **Plenary 4:** **Prof. Dr Noorzaid Muhamad,** Universiti Kuala Lumpur Royal College of Medicine Perak, Malaysia Title: Current Trend and Future Challenges in Integrative Physiology: UNIKL Chapter **Speaker 4** **Dr Khairil Azwan bin Malim Jaafar,** Universiti Kuala Lumpur Royal College of Medicine Perak Title: Hypothalamic-Pituitary-Adrenal (HPA) Axis activated by high-fat and high-sugar diets in male Sprague Dawley rats **Speaker 5** **Assoc. Prof. Dr Rekaya Vincent Balang**, Universiti Malaysia Sarawak Title: The essentiality of Integrating Physiological Knowledge into Professional Nursing Practice **Speaker 6** **Assoc. Prof. Dr Norsham Juliana Nordin**, Universiti Sains Islam Malaysia Title: Physiological Foundations of Wellness Rhythms: Exploring Circadian Harmony as the Pillars of Sustainable Physical and Psychosocial Well-Being
12:30 PM	**LUNCH BREAK & Poster Viewing**
02:00 PM	Session 6. Oral Presentation **Chairperson: Dr Jannathul Firdous** Theme: Neuro- and Endocrine physiology and related disorders **OP-15: Dr. Syed Ibrahim Jamallulail Syed Zainal Yussof** Subacute polyneuropathy secondary to a toxic thyroid adenoma **OP-16: Dr. Hakim Gharib Bilal** Dysmenorrhea among medical students in a medical college in Ipoh, Perak, Malaysia: the association with body mass index (BMI) and effect on daily activities **OP-17: Ms. Khairunnisa Abdul Rashid** Investigation of aberrant lipid metabolism in human glioma tissue using untargeted lipidomic analysis **OP-18: AP Dr. Soon Siew Choo** Leveraging neuroplasticity in spinal cord injury rehabilitation **OP-19: Ms. Sumathy Arumugam** A case of recurrent accidental ingestion of hijab scarf needle pin
03:00 PM	**BREAK and Poster Viewing** **Ipoh Tour**
05:00 PM	End of Day 2

Day 3, 29 February 2024, Thursday	
08:00 AM	**Registration of Participants**
08:30 AM	**Session 7. Chairperson: Dr Vignesh Ramachandran** **Plenary 5** **Prof. Dr Mohd Fadzillah Abdul Razak**, Universiti Sains Islam Malaysia Title: Is modulation of Dopamine D2 the only action of Antipsychotics? **Speaker 7** **Prof. Dr. Padmavathy Kathamuthu Masilamani**, Universiti Kuala Lumpur Royal College of Medicine Perak Title: Impact of Facemask on Physiological Parameters during Six Minute Walk Test **Speaker 8** **Dr. rer. Medic. Dr. M. Ichwan, Universitas Sumatera Utara** Title: Association of BACE1 Gene Polymorphism (rs638405) with BACE1 level and Cognitive function in Elderly: A pilot study in Medan City
10:00 AM	**TEA BREAK**
10:30 AM	**Session 8. Oral Presentations** **Chairperson: Dr Khairil Azwan bin Malim Jaafar** Theme: Cancer Research and Immunology **OP-20: Dr. Sivananthan Manoharan** Pyrimethamine reduced tumour growth in pre-clinical cancer models: a systematic review to identify potential pre-clinical studies for future human clinical trials **OP-21: Dr. Shafinah Ahmad Suhaimi** Functional analysis of matrix metallopeptidase 3 (MMP3) coding single nucleotide polymorphisms in MCF7 breast cancer cells **OP-22: Dr. Fithria Aldy** The association between neutrophil lymphocyte ratio (NLR) and ocular manifestations among human immunodeficiency virus (HIV) positive children **OP-23: Ms. Selene Si Ern Tan** Enterovirus D68 and host immunity: signalling insights **OP-24: Dr. Sam Annie Jeyachristy** Molecular docking and in-silico analysis of miRNAs 23a-5p and 182-5p with RNF38 and BRD4 in Acute Myeloid Leukaemia **OP-25: Dr. Jannathul Firdous** Formulation and optimisation of an agro-waste based culture medium for cultivation of probiotic bacteria
12:00 PM	**Closing Ceremony and LUNCH**

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Initiation of CIPMM cluster

LIST OF ORAL PRESENTATIONS

Day 1, 27 February 2024 - Session 3A
Theme: Metabolic Disorders & Nutrition
Chairperson: Dr Fazlin Zaini

OP-01	03:45 PM	Dr. Kogila Supramaniam	Level of emotional intelligence among chronic kidney disease patients' using MSCEIT	UniKL RCMP
OP-02	03:55 PM	Dr. Nurul Syahirah Ahmad Sayuti	Hepatotoxicity and hepatoprotectivity of *Christia vespertilionis (L.f.) Bakh. f.* leaves ethanolic extract in oral gavage Sprague Dawley rats	AIMST
OP-03	04:05 PM	Ms. Prema Subramaniam	Analysis of NT-PROBNP biomarker among pulmonary arterial hypertensive patients with ventricular and atrial septal defect	University College of MAIWP International
OP-04	04:15 PM	Ms. Ammara Shaikh	The therapeutic potential of kelulut honey in mitigating the pathological changes in Alzheimer's disease in rat models	UKM
OP-05	04:25 PM	Dr. Vita Camelia	Hypoglycaemia among chronic methamphetamine abuser after methamphetamine abstinence during rehabilitation in Medan City	USU
OP-06	04:35 PM	Prof. Dr. Dina Keumala Sari	Analysis of the antihyperlipidaemia and antioxidant activity of red palm oil (*Elaeis guineensis*), Koja Bay leaves (*Murraya koenigii L Spreng*), and passion fruit seeds (*Passiflora edulis f. edulis Sims*) formulations in Sprague-Dawley rats	USU
OP-07	04:45 PM	AP Dr. Yetty Machrina	Ethanol extract of Melinjo peel (*Gnetum gnemon*) protects the liver against hyperuricemia-induced damage in experimental animal model	USU

Day 1, 27 February 2024 - Session 3B
Theme: Biomedical Technology and Diagnostic Methods
Chairperson: Dr Ravindran Jaganathan

OP-08	03:45 PM	Ms. Hasmawati Yahya	The role of modified nominal group technique (mNGT) in developing diabetic kidney disease mobile apps	Kolej Polytech Mara
OP-09	03:55 PM	Prof. Dr. Dina Keumala Sari	Screening analysis of passion fruit seed ethanol extract and the antioxidant activity against 4-nitroquinoline-1-oxide induced tumour in Sprague-Dawley rats	USU
OP-10	04:05 PM	Dr. Eka Roina Megawati	Exploring the correlation between anthropometric variables, flexibility and agility in children	USU
OP-11	04:15 PM	Dr. Adristi Anargya	The assessment of performance matrix between individuals of ACE ID and ACE DD genotype after a 6-week endurance training	Indonesia Defence University
OP-12	04:25 PM	Dr. Noor Akmar Nam	A comparative review of different salivary biomarkers detection by electrochemical biosensor in the diagnosis and monitoring of periodontal diseases	USIM
OP-13	04:35 PM	Dr. Fairus Fariza Zainuddin	Time delay in anterior cruciate ligament reconstruction (ACLR) surgery and return to sports (RTS) after ACLR surgery	UPSI
OP-14	04:45 PM	Prof. Dr. Dewi Masyithah Darlan	Soil-transmitted helminth infection of native community in North Sumatera province, Indonesia: prevalence and risk factors assessment	USU

LIST OF ORAL PRESENTATIONS

Day 2, 28 February 2024 - Session 6 Theme: Neuro– and Endocrine Physiology & related disorders Chair Person: Dr Jannathul Firdous				
OP-15	02:00 PM	Dr. Syed Ibrahim Jamallulail Syed Zainal Yussof	Subacute polyneuropathy secondary to a toxic thyroid adenoma	UniKL RCMP
OP-16	02:10 PM	Dr. Hakim Gharib Bilal	Dysmenorrhea among medical students in a medical college in Ipoh, Perak, Malaysia: the association with body mass index (BMI) and effect on daily activities	UniKL RCMP
OP-17	02:20 PM	Ms. Khairunnisa Abdul Rashid	Investigation of aberrant lipid metabolism in human glioma tissue using untargeted lipidomic analysis	UM
OP-18	02:30 PM	AP Dr. Soon Siew Choo	Leveraging neuroplasticity in spinal cord injury rehabilitation	MAHSA
OP-19	02:40 PM	Ms. Sumathy Arumugam	A case of recurrent accidental ingestion of hijab scarf needle pin	UniKL RCMP

Day 3, 29 February 2024 - Session 8 Theme: Cancer Research & Immunology Chairperson: Dr Khairil Azwan bin Malim Jaafar				
OP-20	10:30 AM	Dr. Sivananthan Manoharan	Pyrimethamine reduced tumour growth in pre-clinical cancer models: a systematic review to identify potential pre-clinical studies for future human clinical trials	IMR
OP-21	10:40 AM	Dr. Shafinah Ahmad Suhaimi	Functional analysis of matrix metallopeptidase 3 (MMP3) coding single nucleotide polymorphisms in MCF7 breast cancer cells	USM
OP-22	10:50 AM	Dr. Fithria Aldy	The association between neutrophil lymphocyte ratio (NLR) and ocular manifestations among human immunodeficiency virus (HIV) positive children	USU
OP-23	11:00 AM	Ms. Selene Si Ern Tan	Enterovirus D68 and host immunity: signalling insights	Monash University
OP-24	11:10 AM	Dr. Sam Annie Jeyachristy	Molecular docking and in-silico analysis of miRNAs 23a-5p and 182-5p with RNF38 and BRD4 in Acute Myeloid Leukaemia	UniKL RCMP
OP-25	11:20 AM	Dr. Jannathul Firdous	Formulation and optimisation of an agro-waste based culture medium for cultivation of probiotic bacteria	UniKL RCMP

LIST OF POSTER PRESENTATIONS

Theme: Neurophysiology & Neurological Disorders			
PP-01	Dr. Yip Hung Loong	Role of occupational therapist in managing speech delay in the local community: a case study	UniKL RCMP
PP-02	Dr. Fazlin Zaini	Sorbitol accumulation in Schwann cells under prolonged hyperglycaemic condition	UniKL RCMP
PP-03	Dr. Santibuana Abd Rahman	Does memorizing Quran affect brain activity?	UniKL RCMP
PP-04	Ms. Aina Najwa Mohamad Aziz	Quercetin counteracts neurodegeneration through anti-inflammatory reprogramming of microglia	UniKL RCMP
PP-05	Dr. Thenmoly K Damodaran	The optimal concentration and time course of neurobehavioural impairment in the rotenone-induced Parkinson's disease model in the zebrafish larva	AIMST
PP-06	Dr. Evelyn Jerusha Edward	The effect of zinc, cadmium, and lead exposure associated with neuroanatomical and neurobehavioral changes in zebrafish model	AIMST
PP-07	Ms. Amirah Salwani Zaulkffali	High concentration of insulin induced insulin resistance in SKNSH neuronal cells	AIMST

Theme: Infectious Diseases & Immunology			
PP-08	AP Dr. Roswati Muhammad Noor	Analysing neonatal jaundice associated with maternal alloantibodies at Hospital Raja Permaisuri Bainun, Ipoh, Perak: a retrospective study.	UniKL RCMP
PP-09	Dato' Wahinuddin Sulaiman	Co-existence of morphoea and scleroderma with vasculopathy and negative autoantibodies: case report	UniKL RCMP
PP-10	Dr. Zaw Htet Tun	Commentary: considering nasal vaccine as an ultimate tool to control future coronavirus pandemics	UniKL RCMP
PP-11	Prof. Dr. Noorzaid Muhamad	The effects of *Jatropha curcas* latex extract on L3 *Aedes egypyti* mortality	UniKL RCMP
PP-12	Dr. Waseem Ahmad	Dengue dynamics in Kuantan, Pahang Malaysia: an interplay of climate factors and disease	UniKL RCMP
PP-13	AP Dr. Ariza Mohamed	The effect of betel leaf extract on the growth of *Candida albicans*	UniKL RCMP
PP-14	AP Dr. Ravi Shankar Savanna	Food insecurities among college students in Ipoh, Perak	UniKL RCMP
PP-15	Ms. Nur Syafina Hisham	*Ibifidobacterium bifidum*-mediated changes in gastrointestinal tight junctions: a review on possible underlying mechanism of lapatinib-induced diarrhoea	UITM
PP-16	Dr. Andika Pradana	The role of probiotic on short-chain fatty acids (SCFA) and interleukin-6 (IL-6) levels in mice model of chronic obstructive pulmonary disease (COPD)	USU
PP-17	Prof. Dr. Dewi Marsyitah Darlan	Comparison of the accuracy of Blastocystis hominis diagnosis methods using direct examination and Jones Medium culture: a systematic review and meta -analysis	USU
PP-18	Dr. Muhammad Surya Husada	The relationship between leukocyte telomere length, and cognitive function and symptom severity among Batak schizophrenia patients	USU
PP-19	Ms. Aminah Suhaila Haron	Knowledge, attitude and practice (KAP) regarding antibiotic resistance among dental and medical students of AIMST University, Kedah.	AIMST
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K-01

Advancement of Artificial Intelligence and Medicine

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The rapid evolution of artificial intelligence (AI) is reshaping the landscape of the medical field, offering unprecedented opportunities for innovation and improvement in patient care. This talk will delve into the latest technological advancements in AI within the medical domain, highlighting breakthroughs in diagnostic accuracy, treatment optimization, and overall healthcare delivery.

We will explore state-of-the-art machine learning algorithms that are transforming medical imaging, enabling early detection of diseases with greater precision. Furthermore, the presentation will talk about the incorporation of AI into personalized medicine, demonstrating how predictive analytics and data-driven insights can create personalized treatment plans that are tailored to the needs of every patient.

As we navigate through the technological frontier, ethical considerations and regulatory challenges will be addressed, emphasizing the importance of responsible AI deployment in healthcare. Case studies and success stories will be presented to illustrate tangible benefits and showcase how AI is enhancing medical professionals' capabilities.

K-02

The musculoskeletal system in health and disease - a multidisciplinary approach to find better treatments for musculoskeletal diseases

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Musculoskeletal diseases are one of the worlds leading cause of disability with 1.71 billion people having musculoskeletal conditions worldwide, leading to significant socio-economic cost and poor quality of life across the globe. Musculoskeletal diseases include rare congenital diseases such as Osteogenesis imperfecta and Hypophosphatasia (HPP); common, often epigenetic, diseases such as osteoarthritis and osteoporosis; and cancers that affect the bone both directly such as osteosarcoma and Ewing's sarcoma primary bone cancers, and those cancer that metastasis to bone such as breast and prostate cancer. The focus of the Gartland Lab is understanding the basic cellular and molecular mechanisms responsible for these musculoskeletal diseases. Our Research involves a multidisciplinary approach using clinically relevant in vitro and in vivo models of disease, physiological experimentation and state of the art molecular techniques. This talk will give an overview of the projects past and present to illustrate how our approach and our research findings are moving towards better treatments for patients with Musculoskeletal diseases.

P-01

Regulation of nutrient in supporting physiology process of exercise

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There should be an integrative approach to working with exercise condition. Many physiological and nutritional demands occur within the body during exercise. As muscles contract, the demand for oxygen, hydrogen and other key nutrients increases. The human body requires a continuous supply of energy to perform its many functions. Many factors influence performance including, but not limited to, diet, hydration, fitness level, intensity and duration. Healthy eating habits and the use of supplements and sports foods may be necessary to support energy needs for training, achieving permance goal, and reducing the incidence of illness and injury. Energy is the most important component of successful sport training and performance is to ensure adequate calorie intake to support energy expenditure and maintain strength. Carbohydrates are the preferred substrate for contracting skeletal muscles during high-intensity exercise and are also readily utilized during moderate intensity exercise. Types of carbohydrate and food timing is the most importing thing to understand. Protein, fat, vitamin-mineral, and fluid have its own rule in supporting physiology process of exercise. Besides all the nutrient, athletes used herbal to support their activity via the antioxidant activity pathway.

Keywords: exercise, period timing, performance, nutrition, antioxidant

P-02

Natural compounds and derivatives as new drug candidates for endocrine and metabolic disorders - over one and a half decades

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Cancer and Diabetes are the leading complex, heterogeneous sets of diseases with higher mortality rates. Phytotherapy emerges as an ultimate treatment strategy because plant-based therapies are highly commendable for their better compatibility, lesser side effects and are also enduring in terms of feasibility and druggability. The endocrine signaling network with receptors and downstream effector molecules are involved in the control mechanisms of homeostasis. The therapeutic potentials of the phytocomponds are therefore interlinked with the cascade of signaling pathways relying on endocrine regulators.

Biochemical assays, RIA, cell based assays such as MTT & LDH, AO/EtBr and DAPI staining, flow cytometric analysis, immunocytochemistry, molecular techniques such as DNA fragmentation using agarose gel electrophoresis, gene and protein expression studies via PCR and Western blot techniques, Light microscopic studies and immunohistochemical analysis of tissues, CADD and molecular docking analysis were applied to fulfill the objectives. The antidiabetic, anticancer and chemopreventive efficacy of the phytocompounds isolated from the various solvent extracts of medicinal plants like *Cassia fistula, Terminalia bellerica, Tinospora cordifolia, Gymnema sylvestre, and Costus speciosus* has been evaluated and proved to possess the therapeutic efficacies against diabetes and cancer.

The *in-silico* approaches utilizing the computational tools is coherent to the former *in-vitro* studies. The research evidences suggest that several key hormones, enzymes and proteins involved in the diabetic and cancer pathways are way more interconnected with the endocrine signaling factors and system. This provides a synergistic therapeutic effect of the phycompounds in diabetic and cancer conditions. The future research focus is based on the identification and crystallization of the pivotal protein receptors involved in insulin signaling and apoptotic pathways through X-ray crystallographic studies.

DBT-BIF Centre, Holy Cross College(Autonomous), Tamil Nadu, India is greatly acknowledged for *in-silico* studies.

P-03

Microglia: Distinct Brain Macrophages and their Role in Disease

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Technology begets scientific discoveries and this rings true for the microglia cell too. Microglia are glial cells found in the central nervous system (CNS). They are also the only resident immune cell of the CNS. Traversing between its roles as both a supportive cell of the CNS and an immune cell, microglia occupy a unique niche of being not quite a tissue macrophage, and not quite a glia. In my talk I will describe the ontogeny of microglia, their well-described role in inflammation and the technological advances in laboratory techniques that led to not only discoveries, but also to correcting the past misconceptions we had about these cells. I will also describe the work we do in the lab, mainly centred around microglia cell culture models and approaches to downregulate their inflammatory responses. Observing the history of microglia research over the decades offers a wonderful study of how physiological instruments and molecular techniques form clearer opinion on health and disease.

Keywords: microglia, inflammation, neurodevelopment, neurodegenerative disease, neuropsychiatric disease

P-04

Current Trends and Future Challenges in Integrative Physiology: UNIKL Chapter

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Cluster for Integrative Physiology and Molecular Medicine (CIPMM) was founded in 2015 by Prof Noorzaid with intention to allow research collaboration between Royal College of Medicine Perak (RCMP) Campus with other 11 campuses in UNIKL which are mainly non-medical programme based throughout Malaysia. Begin with research work on aviation physiology between RCMP and Malaysian Institute of Aviation Technology (MIAT) Selangor, CIPMM extended the collaboration to the rest of engineering Campuses ie Malaysian Institute of Chemical Engineering Technology (MICET) Malacca, Malaysian Spanish Institute (MSI) Kedah , British Malaysian Institute (BMI) Selangor, Institute of Medical Science Technology (MESTECH) Selangor a few years later. Apart from producing new knowledge, its also allowing potential problem solving in many areas of medical research that previously has not been shared amongst us. Study on aircraft maintenance workers and their stress level, car driver and their brain activity and robot rehab development and neuroplasticity between RCMP-MIAT, MSI and BMI campuses respectively was among project that has been receiving grant successfully. Other significant activities are via join Post graduate research supervision and consultation ie RCMP -MESTECH, MICET, Malaysian Institute of Industrial Technology (MITEC, Johor) on natural product and neuropathy, development of biosensor and biomarkers and development new blood pressure medical devices respectively. However, Covid 19 Pandemic slow down the progress of CIPMM activities and in some cases cease the project all together. The challenges now is to start back the initiatives between us and physical distance can be part of the reason that slow the progress.

Keywords: Intergrative Physiology and Molecular Medicine

P-05

Modulation of Dopamine D2, the only Mechanism of antipsychotics: a Review

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The past seven decades have witnessed the development of information and knowledge in the understanding of the mechanism of mental illness. The journey starts with the discovery of antipsychotic properties of promethazine by Henri Laborit and followed by a proper clinical trial by Delay and Denicker. However, only in the mid of 50s, Roland Kuhn able to shed light that the mechanism of psychosis and depression is different. The development of classical dopamine hypothesis that hyperactivity of dopaminergic pathway in the mesolimbic causes psychosis is far from satisfactory as it only explains the positive symptoms of schizophrenia. It was not able to explain the mechanism of negative and cognitive symptoms which are the most important predictor of schizophrenia outcome. The development of second-generation antipsychotics which gives a better side effect profile (EPS) and in general a better outcome in cognitive and negative symptoms are far from explaining the pathophysiology of schizophrenia. This review will discuss the role of dopaminergic transmission in schizophrenia, and whether glutamate is the decisive factor behind the pathophysiology.

Malaysian Lactic Acid Bacteria as Potential Neuraceutical-based Amyloid-β Inhibitor for Prevention of Alzheimer's disease

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Introduction: Alzheimer's disease (AD) is the most common type of dementia amongst the elderly. Currently, over 35 million people worldwide are living with this condition and the number is expected to increase by 2030. The brain of an AD patient is characterised by deposition of β-amyloid (Aβ) plaque and hyperphosphorylation of tau proteins. The mechanisms underpinning these hallmarks, however, remain unclear, thus making the design of AD specific therapy very challenging. The existing treatments do not cure AD but only alleviate its signs and symptoms. Nowadays, emergence of gut-brain axis has linked lactic acid bacteria (LAB) to neuroprotection against neurodegenerative disease.

Objective: Preliminary studies of Malaysian LAB showed neuroprotective effect against AD. The present study hypothesised that the LAB-induced neuroprotection may be mediated through inhibition of Aβ activity.

Methods: MRS broth fermented with LAB (five *Lactobacillus* spp, eight *Pediococcus* spp and the commercial *Lactobacillus casei*) was tested at their respective highest sub-toxic dose against APP transfected SK-N-SH, a neuroblastoma cell line, in the presence of 1 µg/mL RhoA activator II for 24 h. The activity of Aβ in treated cells was then measured using the Amyloid beta 1-42 ELISA kit for three independent experiments.

Results: The *Pediococcus* spp, especially *Pediococcus pentosaceus* ATCC 25745 (LAB 6), were excellent inhibitors of Aβ production. LAB 6 attenuated Aβ production by 31% ± 10.23. *Lactobacillus* spp and the thioperamide (H3 histamine receptor antagonist) elicited almost comparable inhibitory profiles, with Aβ production reduced at maximum by 21.2% ±1.908 and 17.9% ±2.858, respectively.

Discussion: Local LAB especially LAB 6 may serve as potential Aβ inhibitor for use as preventive agent against AD. The Aβ inhibitory effect of LAB is more superior when compared to existing drug thioperamide.

Conclusion: The outcome of the present study also provides important insight for design of future therapeutic intervention for AD.

Keywords: Lactic acid bacteria, β-amyloid, tau proteins, Alzheimer's disease, APP

S-02

Elucidating S-Allyl-L-Cysteine Impact to the Heart Function and Vascular Reactivity in Estrogen-Deficiency Rats

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Introduction: Ischemic heart disease is more prevalent among postmenopausal women due to estrogen deprivation. Estrogen is deemed as cardioprotective as it regulates vascular function by eliciting the release of nitric oxide (NO). S-Allyl-L-cysteine (SAC), a compound found abundantly in aged garlic, is believed to protect against myocardial ischemia-reperfusion injury (IRI) and vascular dysfunction by stimulating the production of hydrogen sulfide (H_2S), a gasotransmitter with a similar function as NO.

Objective: This study aims to explore the impact of SAC in myocardial IRI model in ovariectomized rats.

Methods: Thirty female Wistar rats were randomly allocated into five groups: Sham, OVX+Sham-IR+SAC, OVX+IR, OVX+IR+SAC+PAG (propargylglycine, CSE inhibitor) and OVX+IR+SAC. Rats underwent bilateral ovariectomy through a ventral approach, while sham-ovariectomy rats underwent the same procedure without cutting the ovaries. After recovery, the rat's heart was isolated and underwent 45 min ischemia and 120 min reperfusion with SAC (1 mM) treatment in the first 15 min of reperfusion. Throughout the experiment, heart function was recorded, and coronary effluent was measured at different time points for lactate dehydrogenase, and the infarct size was analyzed. Simultaneously, the thoracic aorta was isolated to measure for vascular reactivity.

Results and Discussion: Ovariectomized rats exhibited cardiac damage from increased troponin-T in the blood ($p<0.05$). SAC improved the left ventricle developed pressure following an ischemic insult and significantly reduced total LDH release and infarct size ($p<0.05$). Endothelium-dependent relaxation induced by acetylcholine of the ovariectomized rat's aorta was improved after incubation with SAC for 1 hour.

Conclusion: SAC exerted cardioprotective in preventing detrimental effects after myocardial ischemia injury.

Keywords: ovariectomized; hydrogen sulfide; myocardial ischemia-reperfusion injury (IRI); heart function; vascular reactivity

Engineering artificial tissue through innovative 3D cell culture model

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For many decades, drug discovery endeavors have relied on two-dimensional (2D) culture methods of eukaryotic cells on flat substrates made from glass or polystyrene. The lack of relevant architectural features is the major disadvantage which may lead to differing biological responses than in the native tissue, hence a poor predictive model for the clinical outcome. Consequently, the failure rate of drug discovery remains high with 90% of drugs failing in the clinical trial phase. Three-dimensional (3D) cell culture systems are seeing a rapid rate of development, principally driven by the need for conducting studies in better predictive model systems toward improving the success rate of drug discovery. Our works explore the application of tissue engineering techniques to generate “artificial tissue in a dish” models through 3D cell culture systems. To establish such models, we utilized innovative biofabrication methods such as electrospinning and the emulsion-solidification technique to fabricate 3D scaffolds as the architectural foundation for our experimental 3D cell culture systems. For instance, we experimented with aligned electrospun polycaprolactone (PCL) microfibrous scaffolds to establish a 3D cell culture system for peripheral nerve tissue. Through neuronal-Schwann cell co-culture in the scaffolds, we have demonstrated that the 3D cell culture system can mimic the native tissue by recapitulating the anisotropic organization of the peripheral nerve tissue. We also experimented with PCL microcarriers as a potential scaffold for 3D cell culture systems with promising results. Our preliminary study on PCL microcarriers using Hep-2 cell line indicates that these scaffolds can support cell attachment and growth. Our studies support the use of electrospun PCL microfibres and PCL microcarriers as scaffolds for 3D cell culture systems. Such scaffolds will be valuable for the future of drug discovery and development.

Keywords: 3D cell culture; Tissue Engineering; electrospinning; microcarrier; peripheral nerve engineering.

S-04

Hypothalamic-Pituitary-Adrenal (HPA) Axis activated by high-fat and high-sugar diets in male Sprague Dawley rats.

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Introduction: The pituitary gland is considered as the master gland as it regulates all other major hormones. The corticotroph cells of the anterior pituitary gland secretes the adrenocorticotrophic hormone (ACTH) which initiate corticosterone production in rodents via the hypothalamic–pituitary-adrenal axis (HPA axis). The ACTH and corticosterone are frequently used as the hormonal marker for measurement of physiological stress. Disturbance in the ACTH and corticosterone hormones were observed in many modern diseases such as Addison's disease, Cushing's syndrome, and also metabolic syndrome.

Objective: The objective of this study is to identify which particular diet produces the most and least physiological stress on the Sprague Dawley rat.

Methods: Thirty-five male Sprague Dawley rats were randomly grouped into five groups (n=7). They were given five different types of diets namely control, high-fat, high-protein, high-sugar, and high-starch. Tap water was supplied as drinking water. Both the diets and drinking water were supplied ad libitum. After eight weeks of treatment with the diets, the rat's blood was collected, and their serum separated. The individual components of ACTH and corticosterone from the blood was extracted, purified, identified using the standard HPLC protocol. The two hormones were then quantified using the High-Performance Liquid Chromatography (HPLC) with photodiode array (PDA) analysis method.

Results and Discussion: The HPLC results revealed that a high -sugar diet promotes the highest ACTH blood level. It was also noted that both the high-fat and high-sugar diet group showed the highest peak for corticosterone.

Conclusion: Consumption of high-fat and high-sugar diet for eight weeks is suggested to induce physiologic and metabolic stress in Sprague Dawley rats as evidenced by the HPA activation.

Keywords: HPA axis, high-sugar, high-fat, HPLC

The essentiality of integrating physiological knowledge into professional nursing practice

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Professional nursing practice can be demonstrated by nurses through their abilities to relate and translate their knowledge and comprehension of patient pathophysiology into the patient observation, treatment selection, research and patient safety and forms. The acquisition of physiological knowledge provide scientific and holistic justifications for nurses to deliver evidence-based care which they can rationalise all their nursing actions and formulate individualised nursing care to patients systematically. In other words, the possession of an adequate physiological knowledge supports nurses' accountability and autonomy in their day to day practices. Furthermore, the ability to coalesce the body of physiological knowledge in nurses' practices enhance their communication with multiple professions eloquently, promotes patient/family trust in nurses which it is the basis for building trusting relationships with patients and their families. Thus, the physiological knowledge provision in the nursing curriculum in a tenacity manner is the paramount in the nursing education in order to equip future nurses with exceptional critical thinking and clinical reasoning skills when performing patient centred care.

Keywords: Integrating, Physiological Knowledge, Professional Nursing Practice

S-06

Physiological Foundations of Wellness Rhythm: Exploring Circadian Harmony as the Pillars of Sustainable Physical and Psychosocial Wellbeing

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Circadian rhythm, intrinsic to all living systems, play a crucial role in maintaining external and internal temporal order. The rhythm synchronises all physiological regulations with environmental changes, ensuring optimal functioning. However, disruptions to the circadian patterns that is referred to as circadian disruption lead to various adverse effects on health, physical performance, and mental wellbeing. The primary zeitgeber for circadian rhythms is the environmental light–dark cycle. Additionally, energy intake and expenditure significantly influences circadian robustness. Current studies are focused on understanding how biological clocks provide cues for maintaining harmony in the body's circadian regulation, contributing to sustainable health and well-being. Recent healthcare research is shifting from a pathological approach of finding solutions after a disease occurs to an integrative physiology approach. This involves harmonizing our body's cues with environmental changes to prevent the occurrence of diseases. Our studies to date encompass diverse populations, including women, young adults, postpartum mothers, cardiac patients, and a specific emphasis on shift workers, both in industrial and healthcare settings. We are investigating multiple factors related to circadian regulation to comprehend the alterations in psychosocial and physical health. The most significant changes, greatly influenced by circadian dysregulation, are observed in the quality of sleep and mental health status. These changes subsequently trigger a domino effect on physical health, overall quality of life, and work-related well-being. While our study remains ongoing, we have established collaborations with international industrial players such as Alps Alpine, the Ministry of Health, and private healthcare centers like IJN and KPJ Healthcare. Our early findings and published data highlighted crucial evidence that circadian harmony, supported by nutritional intake and energy expenditure, serves as a foundational pillar for sustainable physical and psychosocial well-being. We continue our research in diverse areas and with various collaborators, recognizing that optimizing these rhythms can contribute to a healthier, more balanced life.

Impact of facemask on physiological parameters during six-minute walk test

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Since the COVID-19 pandemic, awareness of using a respiratory protector has increased due to active promotion of masking in public and social places. The effect of using a mask in controlling the spread of COVID-19 was evident. The health authorities and governments around the globe were singularly employing masking in public and physical distance keeping as an imminent tool to bring the pandemic under control until and after the introduction of COVID-19 vaccines. The surgical masks and N95 masks were predominantly used by the masses. Only a few cultures such as South Korea and Japan practiced regular masking in social places. Worldwide, the general population was required to wear a facemask in workplaces and public places, which they never practiced in their life.

During the same period, a lot of scepticism arose about the unproven side effects of wearing a facemask, such as breathlessness, lowering oxygen saturation, and rebreathing of carbon dioxide. An unforeseen battle was fought to make the population understand the importance of masking for the control of respiratory infectious disease. But most of them refused to wear a mask as they did not believe it will help in preventing the spread of respiratory diseases. Also, masking made them gasp for oxygen, increasing heart rate, blood pressure, and body temperature.

We tried to explore if wearing a mask affects the general population for any of the reasons mentioned. We even tried with N95 and full body Personal Protection Equipment (PPE) kit using six-minute walk test, a submaximal exercise as an intervention. The answer is an astounding no! From the lessons of the COVID-19 pandemic, newer respiratory diseases are imminent, where masking would be important and necessary to control the spread of disease. And when asked, say ‘mask is a lesser inconvenience than being a victim of a denial.’

Key words: SpO_2 %, Heart rate, Blood pressure, PPE

S-08

Association of BACE1 gene polymorphism (rs638405) with BACE1 level and cognitive function in elderly: a pilot study in Medan City

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Introduction: Cognitive impairment is associated with age and a common problem in elderly. It can lead to functional disabilities and dependence on help of others. Genetic is one of risk factors for cognitive decline and dementia. The β-Site APP-cleaving enzyme 1 (BACE1) is involved in the formation of amyloid β that leads to the formation of neurotoxic amyloid plaques. Increased level of BACE 1 is found in Alzheimer's disease (AD) patients as well as mild cognitive impairment. The synthesis of this enzyme is regulated by BACE1 gene on chromoseome 11q23.3. The BACE-1gene polymorphism C786G (rs638405) in exon 5 may increase the AD risk. The G allele of BACE 1 genes was reported significantly associated with increased BACE1 level and cognitive impairment in chinese population

Objective: To determine the association of the BACE1 gene polymorphism (rs638405) and BACE1 enzyme levels with cognitive function in elderly people in Medan population

Methods: In this analytical study with a cross-sectional design, 36 elderly patients (age 65-70 years old) at USU Medan Hospital, Medan Hajj Hospital, and Community Health Center were recruited as subjects. Indonesian version of Montreal Cognitive Assesment questionnaire (MoCA- Ina) was used to assess cognitive performance. The patients' blood (3 ml in EDTA) was taken to obtain DNA using the Promega DNA Isolation kit. The genotypes of BACE1 : CC (249 bp), GC (249 bp, 160 bp, and 89 bp) GG (160 bp and 89 bp) was determined using restriction fragment length polymorphism. Blood enzyme levels were measured using the ELISA sandwich method. Hardy Weinberg Equibrium analysis was done to confirm polymorphism.

Results: Cognitive test showed that 22,2 % subjects had cognitive impairment (MoCA Ina <26). Subjects with GG genotype was significantly higher in subjects with cognitive impairment (12% vs 0%, p <0,01). Serum BACE1 enzyme level was significantly higher in subjects with cognitive impairment (605,08± 517,88 ng/L vs 290,04±133,97 ng/L, p<0,05).

Conclusion: Cognitive impairment is significantly associated with GG genotype of BACE1 gene higher serum BACE1 level in eldery in Medan population.

Keywords: Elderly, BACE1 gene Polymorphism, BACE1 Level, , Cognitive impairment

Level of Emotional Intelligence among Chronic Kidney Disease Patients using MSCEIT

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Introduction: Chronic kidney disease (CKD) is a condition that damage both kidneys and decrease their ability to keep healthy and they require an ongoing psychological adjustment.

Objective: The aim of the study was to evaluate the reliability and validate the method used to test for emotional intelligence (EI) among CKD patients.

Methods: This study was conducted in a public hospital for patients with kidney disease. A total of 30 CKD patients were included in this study using flat rule of thumb and data collected from June until July 2023. The Mayer -Salovey-Caruso Emotional Intelligence Test (MSCEIT) question booklet were used in both English and Malay language for this study to evaluate the level of EI in CKD patients. The obtained data was analysed using SPSS and AMOS software.

Results and Discussion: Most of the respondent were female n=17 (56.7%) and Male n=13 (43.3%). The mean results for MSCEIT indicates that the highest score is for face component and the lowest is for sensation. The branches of EI were measured, and the Goodness Fit Index (GFI) is accepted in the value of 0.917, RMSEA value of 0.024 which is accepted and TLI is accepted as well at the value of 0.993. The Cronbach alpha for MSCEIT is 0.807 for 30 patients with 8 categories of items. The Goodness Fit Index is accepted at the value of 0.917, RMSEA 0.024 which is accepted and TLI is accepted at the value of 0.993.

Conclusion: Overall, the present study results suggested that MSCEIT can be used for other medical condition for a bigger scale study to evaluate the psychological aspect for further treatment.

Keywords: Chronic kidney disease, MSCEIT, nephrology, emotional intelligence

OP-02

Hepatotoxicity and hepatoprotectivity of *Christia vespertilionis (L.f.) Bakh. f.* leaves ethanolic extract in oral gavage Sprague Dawley rats.

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Introduction: *Christia vespertilionis (L.f.) Bakh. f.* leave has attracted a lot of scrutiny due to its broad range of bioactive components as well as potential health benefits.

Objective: Herein, this study is aimed at evaluating possible hepatotoxicity and hepatoprotectivity in a 14-day acute, 28-day subacute and 90-day subchronic oral gavage of the leave ethanolic extract in male Sprague Dawley rats.

Methods: The extract was administered orally at single dose (2000 mg/kg) on day 1 and observed for 14 days. Meanwhile, in the subacute and subchronic toxicity studies, a total of 30 rats were divided into control, 5% DMSO (vehicle), low dose (75 mg/kg), medium dose (125 mg/kg) and high dose (250 mg/kg) groups. Extract were orally gavage for 28-day and 90-day.

Results and Discussion: Histopathological results showed that single dose (2000 mg/kg) induced significant differences ($p<0.05$) of lesions observed on hepatic necrosis (mild to moderate) and degeneration (very mild). Meanwhile, subacute study showed significant differences ($p<0.05$) of lesions observed on high dose, medium dose and low dose groups has mild to moderate, mild and very mild lesion of hepatic necrosis respectively, accompanied with very mild hepatic degeneration and hepatitis. Besides, for subchronic study showed significantly differences ($p<0.05$) in hepatic necrosis and activated kupffer cells. Hepatic necrosis was observed mild to moderate in both high dose and medium dose groups, while low dose group only had mild lesion accompanied with the number of activated kuffer cells was significantly ($p<0.05$) higher in low and medium dose groups compared to the high dose group. Hepatoprotective can be seen in regeneration lesion scored as all 3 studies showed dose dependent very mild to mild scored. Throughout years, this extract was subjected to phytochemical evaluation to assess the diversity of secondary metabolites that may results in this histological finding and proved to contain long -chained alcohol, fatty acids, alkanes, triterpenes, phenols and alkaloids.

Conclusion: In conclusion, this ethanolic plant extract showed dose dependent hepatotoxicity and hepatoprotectivity response in rats.

Keywords: *Christia vespertilionis (L.f.),* hepatotoxicity, hepatoprotectivity

OP-03

Analysis of NT-ProBNP Biomarker among Pulmonary Arterial Hypertensive Subjects with Ventricular Atrial Septal Defect Subjects

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Introduction: Pulmonary arterial hypertension (PAH) is a pathophysiological disorder involving multiple clinical conditions. N-terminal pro b-type natriuretic peptide (NT-proBNP) being a key component for the development of PAH. Ventricular septal defect (VSD) and atrial septal defects (ASD) being the most common underlying defects.

Objective: This study was aimed to assess the demographic, clinical characteristics, pattern of treatments and NTproBNP biomarker among PAH patients with VSD and ASD.

Methods: In this retrospective single-center analysis, 154 PAH patients with VSD and ASD were recorded from November 1992 to February 2023 at the National Heart Institute (NHI) Cardiology Unit in Kuala Lumpur, Malaysia.

Results and Discussion: Out of the 154 PAH subjects, ASD are 125 (81.17%) are VSD are 29 (18.83%). Among gender, 80.5 % and 19.5% subjects were female and male, respectively. The age group from 20-29 years shows the highest (27.3%) among the other aged groups. Out of the twelve states recorded, Selangor state showed the highest (23.4%) number of patients admitted at NHI. Malay ethnics were higher (71.4%) followed by Chinese (14.9%) and Indian (10.4%), respectively. Cardiac catheterization was performed for all the 154 patients. NTproBNP biomarker is notably seems high among ASD patients (1254±1563) compared VSD patients (701±841), mean pulmonary artery pressure (mPAP) (7.78±10.3) mean arterial pressure (88.1±14.7), and pulmonary flow/systemic flow; (Qp/Qs) (2.31±7.06) were high among the PAH subjects. The management therapies received by the patients are dual therapy (46.1%), mono therapy (28.6%) and followed by triple therapy (13.6%). Sildenafil and bosentan were the most common drugs used as a dual therapy (26.1%), followed by monotherapy drug: sildenafil (20.3%). Elevated levels of NT-proBNP are highly prognostic of PAH.

Conclusion: Factors affecting prognosis, such as NTproBNP, mPAP, and pulmonary flow, are crucial for PAH development with VSD and ASD, necessitating improved awareness, screening, treatment, and management strategies.

Keywords: pulmonary arterial hypertension, atrial septal defect, ventricular defect septal, retrospective

OP-04

The Therapeutic Potential of Kelulut Honey in Mitigating the Pathological Changes in Alzheimer's Disease Rat Models

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Introduction: Alzheimer's disease (AD) represents a global health challenge. Despite extensive research and numerous clinical trials, therapeutic options remain limited, primarily targeting a specific pathological markers. Our study aims to investigate the potential of Kelulut honey (stingless bee honey) as novel therapeutic agent in addressing the multifactorial pathology of AD.

Objective: The objective of this study was to evaluate the potential of Kelulut honey in preventing Alzheimer's disease pathology while assessing its effect in improving cognitive deficits.

Methods: 26 male Sprague-Dawley rats weighing 280-380g were randomly divided into three groups: control (C), disease (AB) and treatment with Kelulut honey (KH). The latter two groups underwent stereotaxic surgery where a total of 2.5 µg/µl of $A\beta_{(1–42)}$ was injected intrahippocampally. One-week post-surgery, Kelulut honey was administered to the treatment group at a dose of 1g/kg for a period of 4 weeks. The rats were subjected to open field and Morris water maze tests before sacrifice and the brains were processed for histochemical staining of Hematoxylin and Eosin, Congo red and TUNEL assay.

Results and discussion: There were no differences observed in the behaviour tests, probably due to the short duration of the study. However, the histochemical staining showed significant changes in hippocampus. Amyloid plaques were observed to be significantly higher in the AB group ($p=0.022$) compared to the KH group. Moreover, there was significantly higher neuronal apoptosis in AB group ($p<0.001$) compared to the KH and control groups.

Conclusion: Our results demonstrate a significantly lower amyloid plaque deposition and neuronal death following Kelulut honey treatment, indicative of its potential to mitigate AD-associated pathology.

Keywords: Alzheimer's disease; Kelulut honey; β amyloid; neuroprotection

Hypoglycaemia among Chronic Methamphetamine Abuser after Methamphetamine Abstinence during Rehabilitation in Medan City

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Introduction: People with chronic methamphetamine use disorder have physical health problems and psychological problems including depression, anxiety, psychosis as well as methamphetamine-related cognitive impairment. During the recovery period with rehabilitation programmes, routine blood tests, current blood sugar, liver function and kidney function have not been a fixed protocol for rehabilitation. Researchers wanted to see how these blood tests performed in people undergoing rehabilitation after methamphetamine abstinence.

Methods: The study was conducted from July 2023 to December 2023, at the Badan Narkotika Nasional of Sumatera Utara Province, and the Rehabilitation Centre of the Ministry of Social Affairs Insyaf, with 43 people who were willing to participate in the study, with the inclusion criteria being male, using methamphetamine > 1 year, the level of dependence with WHO ASSIST 4, abstinence, with a negative urine test for methamphetamine. Exclusion criteria: no history of diabetes, hypertension, and heart disease; no symptoms of psychosis; no history of capitis trauma and neurological disease: epilepsy or stroke.

Results: This study found that the age of methamphetamine users was dominated by the age group 25 (44.2%), high education level (12 years): 62.8% and the level of methamphetamine addiction with intensive intervention as much as 58.1% and the level of addiction to cigarettes short intervention as much as 76.7%, the length of methamphetamine abstinence is the median value of 15 (5-45; min-max) days, with blood sugar levels during venous blood sugar which shows < 70 mg/dl is 74.4% experiencing hypoglycaemia and has a score of Montreal Cognitive Assessment -validated Indonesian language (score < 26) is 90.7% indicating the presence of cognitive impairment.

Discussion: Hypoglycaemia in chronic methamphetamine users despite abstinence is a condition that needs attention in the rehabilitation process. Sustained hypoglycaemia can cause brain damage.

Keywords: hypoglycaemia, methamphetamine use, abstinence

OP-06

Analysis of Antihyperlipidemia and Antioxidant Activity of Red Palm Oil (*Elaeis guineensis*), Koja Bay Leaves (*Murraya koenigii L Spreng*), and Passion Fruit Seeds (*Passiflora edulis f. edulis Sims*) Formulations in Sprague-Dawley Rats

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Introduction: Local wisdom food ingredients in North Sumatra, Indonesia are a source of phenolics which have antioxidant and anti-inflammatory properties.

Objective: This study aims to analyze the combination of red palm oil (*Elaeis guineensis*), koja bay leaves (*Murraya koenigii L Spreng*), and passion fruit seeds (Passiflora edulis f. edulis Sims) to improve the lipid and antioxidant profile of Sprague-Dawley rats.

Methods: This research was an in vitro and in vivo test, starting with analyzing flavonoid of the three compounds, then tested by giving it to mice for 14 days and ending with induction administration of lipopolysaccharide (LPS) for two days. This clinical trial research on animals involved 36 mice divided into 6 groups. At the end of the study, termination and examination of malondialdehyde, lipid profile, glucose and histopathological examination were carried out.

Results: The results of the study showed that there were significant differences in body weight, LDL levels, and LDL/HDL ratio in each group of mice, especially in the group given the three ingredient formulations. There was a significant increase in body weight, especially in the group of mice given LPS and the group with high calories-fat-protein compared to the group given the intervention formulation of the three ingredients. The group given the formulation of these three ingredients showed differences in the formulation group with a dose of 300mg/kg body weight ($p<0.001$). There were no visible changes in the histopathological picture.

Conclusion: The atherosclerosis process can be prevented by administering a formulation of red palm oil (*Elaeis guineensis*), koja bay leaves (*Murraya koenigii L Spreng*), and passion fruit seeds (*Passiflora edulis f. edulis Sims*), a significant reduction, especially in LDL levels and the LDL/HDL ratio . The dose that has shown changes is at a dose of 300mg/kg body weight.

Keywords: atheromatic, leaves, plaque analysis, preventive, oxidized, LDL, nutrition, oil, seed

OP-07

Ethanol Extract of Melinjo Peel (*Gnetum gnemon*) Protects the Liver against Hyperuricema-Induced Damage in Experimental Animal Model

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Introduction: Metabolism of uric acid formation occurs in the liver. The enzyme xanthine oxidase which plays an important role in the formation of uric acid produces *hydrogen peroxidase* (H_2O_2) and *reactive oxygen species* (ROS) hepatocyte damage. Hepatocyte damage can stimulate increasing of the enzyme alanine transferase, and uric acid induction in experimental animals is known to reduce the expression of the hepatocyte growth factor (*Hgf*) gene. In previous studies, it was known that ethanol extract of melinjo peel has antioxidant and anti-inflammatory effects. This study aims to analyze the benefits of giving ethanol extract of melinjo peel on IL-1β mRNA gene expression, MDA, Alt1 and Hgf gene in hyperuricemia rat model.

Methods: This study was an experimental study, using 32 Wistar rats which were divided into 4 groups. K0: normal rats, P1=hyperuricemia, P2=hyperuricemia+allopurinol , P3 = hyperuricemia +ethanol extract of melinjo peel. The intervention of ethanol extract administration was carried out for 10 days. RNA was isolated from from liver, and mRNA gene expression was assessed using real time PCR.

Results: The results showed that *Alt1* expression in P1 was lower than K0 (p=0.001), P2 (p=0.001) and P3 (p=0.059). *Hgf* expression tends to have the same cycling threshold in all groups (p=0.065). The lowest *IL-1β* gene expression was found in rats given melinjo peel ethanol extract (p<0.05) with the average of MDA K0=1.39, P1=2.04, P2=1.27, P3=1.07.

Conclusion: ethanol extract of melinjo peel is able to prevent damage of hepatic cells by reducing inflammation and free radical.

Keywords: melinjo peel extract. *Alt1* gene, *Hgf* gene, *IL-1β* gene, Hyperuricemia, rats

OP-08

The Role of Modified Nominal Group Technique (mNGT) in Developing Diabetic Kidney Disease Mobile Apps

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Introduction: One of the most serious non-communicable diseases is diabetes kidney disease (DKD) which will progress to end-stage renal failure if not managed properly. Thus, the patient must be given proper educational and self-management information in managing their disease. Therefore, in line with the current trend and the convenience of using smartphones, a mobile application will be developed for this purpose.,

Objective: The objective of this study was to determine the main content and sub-contents for the educational and self-management features of mobile apps specifically designed for DKD patients.

Methods: A modified nominal group technique (mNGT) has been used with five experts related to DKD management and two potential mobile apps consumers gathered face to face physically and virtually for about 3 hours. The e-booklet of the proposed mobile apps' main contents and sub-contents was given to participants a week prior to mNGT meeting.

Results and Discussion: During the meeting, the participants generated and discussed their ideas resulting in no changes for 8 items of main content, but 4 items were added on top of the original proposed 46 sub-contents. After six days, the participant's most voted mobile apps sub-content was "diabetes medication", "co-morbidities medication" and "checking blood glucose at home" with a 100% score for each. Two items under the sub-contents of the patient's data, namely "email" and "address" were rated below 70%, with scores of 65.71% and 68.57% respectively. A voting score of other items are in between 77.14% - 97.14%.

All the main content and sub-content items that have been rated more than 70% will be included in the mobile apps for DKD patients. Two sub-content items that rated below 70% were removed.

Conclusion: The mNGT is very useful in gathering experts and consumers to generate ideas and perform a group discussion to determine the items that qualify for inclusion in the content and sub-content of mobile apps. The individual voting and ranking finally concluded the eight items of main contents and 48 sub-content items proposed will be used for an educational and self-management mobile apps for DKD patients.

Keywords: modified nominal group technique; diabetic kidney disease mobile apps; self-management; educational mobile apps

Screening Analysis of Passion Fruit Seed Ethanol Extract and Antioxidant Activity against 4-Nitroquinoline -1-oxide-tumor Induced Sprague-Dawley Rats

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Introduction: Passion fruit seeds containing phenolate compound (bioflavonoid) have strong antioxidant effect in cancer especially oral squamous cell carcinoma (OSCC). Bioflavonoid mixture in passion fruit seeds have role as antioxidant and anti-inflammation effect.

Objective: This study aims to evaluate the antioxidant and anti-inflammatory effects of passion fruit seed ethanol extract and its effect to 4-nitriquinoline-1-oxide (NQO)-tumor-induced Spraque-Dawley rats.

Methods: Twenty-eight male Sprague-Dawley rats were divided into four groups. Group 1 served as the control group, group 2 was 4NQO-induced rats without treatment, and groups 3 and 4 were given 4NQO-tumor inducer with 500 and 1000 mg/kg BW of passion fruits seed ethanol extract, respectively. Tongue tumor volume and dysplasia lesions were analyzed. The tumor-infiltrating lymphocytes (TILs) in the tumor and stromal area were scored semi-quantitatively associating the infiltrate grade (0-3) and analyzed histologically.

Results and Discussion: The results of the analysis of passion fruit seed ethanol extract showed antioxidant activity, the flavonoid examination was carried out with total flavonoid content was found in passion fruit seed extract was 517.11 ± 3.43 mg/g, total phenol was 23.40 mg/g, and piceatannol 4.07±0.08 mg/100 mg sample. Administration of passion fruit seed ethanol extract showed a decrease in body weight in the initial and final phases in the group. There were significant differences in body weight loss between the initial and final phases in groups 2 and 3 ($p<0.05$). The passion fruit seed at doses of 500 mg/kg body (group 3) weight showed the formation of necrotic masses which indicated tissue damage but visible polymorphonuclear (PMN) leuckocytes white blood cells, whereas at a dose of 1000mg/kg body weight (group 4) showed no necrotic mass and lymphocytes cells were seen. Group 3 showed a slower repair process compared to group 4 with a stromal Tumor Infiltrating Lymphocytes (TILs) value of 3, significantly different from groups 2 and 3 ($p<0.05$).

Conclusion: Passion fruits ethanol extract exerts an antioxidant activity and in 4NQO-induced rats by inducing infiltrating lymphocytes in the stromal tumor area on the OSCC lesion of the tongue.

Keywords: antioxidant; exotic fruit, free radical, seed, Sumatra

OP-10

Exploring the Correlation between Anthropometric Variables, Flexibility, and Agility in Children

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Background: Physical fitness in children encompasses several aspects, including flexibility and agility. Anthropometric variables have been identified as potential determinants affecting physical abilities in individuals across different age groups including children.

Objective: The aim of this study was to evaluate the correlation between the anthropometric variables, flexibility and agility on children. Additionally, it sought to examine the association between flexibility and agility.

Methods: In this study, 45 children aged between 6 and 11 years participated. Anthropometric measurements included height, weight, body mass index (BMI), waist circumference, and skinfold measurements on the triceps, biceps, and subscapular areas. Flexibility was assessed using the sit-and-reach test, while agility was evaluated using a speed test.

Results and Discussion: The children's characteristics were as follows: their ages ranged from 7 to 11 years old, with an average height of 136.34 ± 8.95 cm, body weight of 36.36 ± 12.83 kg, BMI of 19.34 ± 5.11 kg/m², waist circumference of 72 ± 11.37 cm, triceps skinfold of 16.46 ± 7.11 mm, biceps skinfold of 10.21 ± 5.38 mm, and subscapular skinfold of 12.39 ± 5.60 mm. The sit-and-reach test ranged between 11.50 and 1525.00 cm, while the speed test ranged between 11.29 and 22.75 seconds. This study found there was an association between the anthropometric variables and flexibility (p value <0.05). However, there was no significant correlation between the anthropometric variables and the agility, except on the triceps skinfold. This study also found that there was a significant association between flexibility and agility test (p value < 0.01).

Conclusion: In summary, while anthropometric measurements display a meaningful association with flexibility, their direct correlation with agility in children appears limited, except in triceps skinfold. Moreover, the association between flexibility and agility emphasizes the potential interdependence of these physical attributes among children.

Keywords: Agility, Anthropometric variables, Children, Flexibility

OP-11

The Assessment of Performance Matrix between Individuals of ACE ID and ACE DD Genotypes after a 6-week Endurance Training

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Introduction: The ACE gene, responsible for blood regulation, cell growth, and maintaining balance within the body, impacts an individual's physical performance. Variations in this gene, such as allele I (insertions) and allele D (deletions), lead to differing effects. Allele I decreases ACE activity, prolonging bradykinin's presence, boosting heart and skeletal muscle contraction, beneficial for endurance training. On the other hand, allele D heightens angiotensin II activity, promoting muscle growth and cell proliferation, advantageous for strength-focused training.

Objective: This study compares six-week endurance training results in subjects with different ACE ID and ACE DD genotypes.

Methods: 17 non-athletic students aged between 20 and 22 were the focus of this research, split into two groups: 10 individuals with the ACE ID genotype and 7 with the ACE DD genotype, identified through PCR analysis of buccal cell samples. Initial data collection involved recording the number of push-up and sit-up completed in 3 minutes and the duration of a plank exercise. After a six-week endurance training program, final data was collected, allowing observation of the changes in performance metrics.

Results: All participants showed progress, with a collective of 4 individuals achieving notable improvements: 3 with the ACE ID gene surpassed 20 push-up repetitions, while 1 with the ACE DD gene achieved the same; 2 ACE ID gene carriers exceeded 35 sit-up repetitions; and another 2 ACE ID gene carriers surpassed 1 minute in plank duration

Conclusions: The ACE ID genotype has more significant potential to increase endurance than ACE DD. Genetic data can be used to determine training orientation preferences.

Keywords: ACE gene, ACE ID genotype, ACE DD genotype, endurance training

OP-12

A Comparative Review of Different Salivary Biomarkers Detection by Electrochemical Biosensor in the Diagnosis and Monitoring of Periodontal Diseases

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Introduction: Currently there is an emerging trend of using electrochemical biosensor for medical and dental application especially for diagnosis and monitoring disease progression. Coupled with non-invasive sampling procedure using patients' saliva samples, electrochemical biosensor has the potential to serve as point-of-care (POC) test device. With regards to dental perspective, there are several studies of which electrochemical biosensors have been used to detect salivary biomarkers in periodontal diseases. However, the types of biomarkers, feasibility of biomarker detection and their detection limit using these biosensors have not been compared.

Objective: This study aimed to compare different types of salivary biomarker that have been used with electrochemical biosensor for diagnosis and monitoring of periodontal diseases.

Methods: A systematic literature search was performed in seven public databases; Pubmed, Science Direct, Scopus, Wiley, SAGE, Web of Science and Google Scholar Search was carried out without any restriction on date of publication however restricted to original research that developed electrochemical biosensor using salivary biomarkers for diagnosis and management of periodontal disease.

Results and Discussion: Literature search resulted in 36 studies that describes various types of electrochemical biosensors capable of detecting specific salivary biomarker(s) associated with periodontal diseases such as gingivitis and periodontitis. Each biosensors have different detection mechanisms and varies in detection limit of biomarkers. Proteins associated with inflammatory conditions for example interleukins, tumour necrosis factor (TNFα) and matrix metalloproteins (MMPs) are the most common biomarkers detected, followed by enzymes such as salivary alpha amylase (sAA).

Conclusion: Based on our cumulative findings, the most common salivary biomarkers detected using electrochemical biosensors are the inflammatory associated proteins. Other types of biomarkers are enzymes and oxidative markers such as glutathione and hydrogen peroxide. Each of these biomarkers are selected due to their association with various pathological process occurring during the disease progression and reflect the current patients' condition.

Keywords: Electrochemical biosensor, periodontal diseases, gingivitis, periodontitis, saliva, biomarkers

Time Delay in Anterior Cruciate Ligament Reconstruction (ACLR) Surgery and Return to Sports (RTS) after ACLR Surgery

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Introduction: This study addresses the scarcity of descriptive epidemiological research on Anterior Cruciate Ligament Reconstruction (ACLR) injuries over a six-year period in Malaysia. Limited research has been conducted on Return to Sports (RTS) activity, especially considering reconstructive surgery time delay and the impact of preoperative physiotherapy on RTS.

Objective: The study aims to (1) identify injury patterns post-ACLR concerning age, gender, and time delay, and (2) identify variables influencing the decision to resume sports.

Method: Data from a single public hospital spanning January 2015 to December 2020 were used for a retrospective analysis. The study included 131 cases (17 national athletes), with a mean age of 27.1 years.

Results and Discussion: Among 114 recreational athletes, ACLR surgery wait times ranged from 1 to 192 weeks, with a median of 15 weeks. National athletes predominantly underwent ACLR within 6 months of injury (94.1%). The majority of ACLR patients (78.9%) did not undergo preoperative physiotherapy. In the second phase with 29 participants (dropout rate 77%), self-reported reasons for not returning to sports varied across groups, with fear of injury being the primary concern (31.03%). Other reasons included impaired knee function, instability, or muscle weakness (10.34% each).

Conclusion: The study highlights the need for a larger sample size and improved methodological considerations. It emphasizes the importance of long-term monitoring of physical function, RTS, and quality of life among patients with ACLR surgery.

Keywords: anterior cruciate ligament reconstruction, injury pattern, return to sports, time delay, preoperative physiotherapy

OP-14

Soil-Transmitted Helminth Infection of Native Community in North Sumatera Province, Indonesia: Prevalence and Risk Factors Assessment

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Introduction: Soil-transmitted helminths once declared as neglected tropical diseases, still, become a global burden among the world population. STH is estimated to be the third most common NTD-causing infection, infecting 1.5 billion people worldwide.

Objective: This study aimed to provide STH prevalence and risk factor analysis among native communities in the rural North Sumatera Province, Indonesia (Simalungun District).

Methods: This study was a cross-sectional study involving Simalungun Bataknese People living in 14 villages spread across the district. Interviews were conducted in the district to assess risk factors and other demographic characteristics. Meanwhile, faecal sample collection was carried out to determine STH positivity. STH presence was evaluated using the Kato-Katz method in the parasitology laboratory, Faculty of Medicine, Universitas Sumatera Utara. The data was analysed using bivariate and multivariate to determine the relationship of each variable with proposed risk factors.

Results: Five hundred ninety-two native Simalungun Bataknese people enrolled in the study assessment. The majority of the age group in the study was 31-45 years old, which also consisted of male predominance (60.5% vs 39.5%). Through faecal sample examination, 14.5% (n=86 individuals) of the participants involved suffered from active STH infection, with hookworms being the most common infection, followed by Trichuris trichiura. Based on regression logistics, participants with uncooked drinking water and a toilet without a septic tank have 2 and 2.3 times the risk of having STH infection, respectively.

Discussion: STH is an infectious disease preventable through mass involvement between stakeholders and the local population. Through engagement from the government, the population would join in accelerating the mass eradication programme to reduce the disease burden, mainly involving good hygiene practices and government availability for sanitation facilities.

Conclusion: Sanitation and hygienic practices play a pivotal role in the STH prevalence rate in the community.

Keywords: helminth, hookworm, parasites

OP-15

Subacute Polyneuropathy Secondary to a Toxic Thyroid Adenoma

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Introduction: Thyrotoxicosis is a hyper-metabolic state caused by many aetiological factors including toxic adenoma. It is associated with several neuromuscular manifestation. However, occurrence of thyrotoxic polyneuropathy has rarely been reported.

Case report: We report a 52-year-old lady with no prior medical illnesses presenting with a 4-week history of progressive flaccid paraparesis without back pain or autonomic dysfunction. She had a vague history of weight loss and heat intolerance with intermittent fever.

Physical examination revealed an asymmetrical paraparesis (left predominance) and areflexia with an intact sensory system. There was a smooth enlargement of the right thyroid lobe with no associated lymphadenopathies. Fine tremors, lid lag and a regular tachycardia (104/minute) were noted. The rest of her physical examination was unremarkable.

Her laboratory investigations revealed a TSH of 0.01 mIU/L, T_3 > 30.8 pmol/L, T_4 89.4 pmol/L, CK 52 U/L, CRP 0.2 mg/L and K^+ of 4.9 mmol/L. Her thyroid ultrasound revealed a solitary nodule in the right lobe measuring 1.7 x 2.3 x 3.8 cm.

We yielded a diagnosis of polyneuropathy secondary to a toxic thyroid adenoma. She was commenced on carbimazole (90mg/day), propranolol (120mg/day) and intravenous hydrocortisone (300mg/day) followed by Lugol's iodine for 48 hours before de-escalation to carbimazole (30mg/day) and propranolol (80mg/day) prior to discharge. She was ambulatory within 14 days of therapy. By day-30, her reflexes and muscle power normalised and she was rendered clinically euthyroid.

Discussion: Thyrotoxic neuropathy or also known as Basedow's paraplegia, is a rare neurological manifestation of thyrotoxicosis and may mimic conditions such as Guillain-Barre syndrome and hypokalaemic periodic paralysis. Interestingly, this condition is fully reversed by normalisation of thyroid function. The pathophysiology of this entity is still currently obscure but is likely to represent a metabolic-associated neuronal degeneration The electrophysiological and pathological features of this condition are discussed.

Keywords: axonal degeneration, demyelination, mixed sensori-motor polyneuropathy, muscle fibre atrophy, anti-thyroid therapy

OP-16

Dysmenorrhea among Medical Students in a Medical College in Ipoh, Perak, Malaysia: the Association with Body Mass Index (BMI) and Effect on Daily Activities

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Introduction: Dysmenorrhea is very common among female adults. It is the commonest gynaecological problem that causes a detrimental impact on their overall performance. A risk factor for dysmenorrhea is body mass index (BMI) but still debatable as previous studies reported different findings.

Aim: This research aimed to determine the association of BMI and dysmenorrhea and its effects on daily activities among female medical students in a medical college in Ipoh.

Method: This cross-sectional study was conducted on 381 female medical students in a medical college, Ipoh. All students with primary dysmenorrhea were selected. Demographic characteristics, menstrual characteristics and daily activities affected were collected using structured questionnaires. Height and weight were measured and BMI were recorded in all participants. Numerical Pain Rating Scale was applied for pain assessment. Chi-square test was used to examine the relationship between variables. Data were analysed using SPSS version 24. P-value less than 0.05 was considered significant in all cases.

Result: The prevalence of dysmenorrhea was 79.3%. The mean BMI was 22.46kg/m^2 with 38% of students had high BMI which was worrying. However, there was no significant association between BMI and dysmenorrhea (p-value > 0.05) but highly significant between dysmenorrhea and its effect on daily students' activities (p-value < 0.001).

Conclusion: In this study, dysmenorrhea was highly prevalent among medical students. It had a significant negative impact on their daily activities. It is recommended to consider other confounding factors and involved more institutions for future study.

Keywords: BMI, Dysmenorrhea, Effect, Medical students, Ipoh

OP-17

Investigation of Aberrant Lipid Metabolism in Human Glioma Tissue using Untargeted Lipidomic Analysis

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Introduction: Gliomas are lethal primary intracranial tumours, characterised by histological and molecular heterogeneity that hinder accurate diagnosis and treatment selection. Dysregulation in lipid metabolism was one of the factors contributing to the heterogeneous biological variability in glioma.

Objective: This study aims to characterise distinct lipid dysregulation and identify significant lipid signatures distinguishing glioma from non-glioma tissue.

Methods: Human tissue lipidomes from 8 controls and 45 patients with different grades of glioma were analysed using liquid-chromatography mass spectrometry (LCMS). The univariate and multivariate analysis models facilitated the identification of differentially abundant lipids (significance $p<0.05$). Receiver operating characteristic (ROC) analysis was performed with values larger than 0.75 were identified as potential lipid biomarkers.

Results: The lipidomic analysis revealed elevated lipid composition with 872 and 862 detected in LGG and HGG, respectively. Bioinformatics analysis revealed reduced in individual lipid subclasses including fatty acyls, glycerolipids and phosphatidylcholine derivatives, whereas carnitine, ceramide and triacylglycerol were elevated in glioma tissue. Partial least squares-discriminant analysis (PLSDA) and hierarchical clustering analysis (HCA) demonstrated that glioma patient and control populations were visually separated by identified lipid biomarkers. Lipid metabolites, LPC 21:3 (AUC=0.925), DG 43:11 (AUC=0.906) and PC 33:1 (AUC=0.892) were among the best lipids biomarkers in glioma tissue.

Conclusion: Collectively, these lipidomic results unveil the aberrant and heterogeneous lipid classes, where multiple lipid-associated pathways were deregulated in glioma tissue. This could lead to an improved understanding of the molecular heterogeneity that underlies the glioma and improve its application in the clinical context.

Keywords: Glioma, lipid, lipidomic, lipid biomarkers, mass spectrometry.

OP-18

Leveraging Neuroplasticity in Spinal Cord Injury Rehabilitation

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Despite being protected by the vertebrae, the spinal cord remains one of the most vulnerable parts of our body as any insults in the form of malformation, trauma, or infection, will render it dysfunctional, leading to many deprived normal functions such as paralysis, weakness, and even death.

Spinal cord injury (SCI) typically results from a terrible fall, motor vehicle accidents, a stroke and other causes will force a patient to accept the devastation of the injury and take their first steps to undergo physical and occupational therapies via rehabilitation programmes to regain independence. Rehabilitation practices for conditions such as SCI, stroke, traumatic brain injury, multiple sclerosis, and other neurological disorders will focus on re-establishing the neurological pathways to enable signalling our brain, a dynamic organ which can change its design throughout life, to respond to new experience by reorganizing connections via the structural remodelling of the brain, in what is referred to as the process of neuroplasticity.

Neuroplasticity underlies the capacity of our nervous system for learning and memory, enabling mental and behavioural flexibility. Thus, engaging neuroplasticity in SCI rehabilitation encompasses making nerve cells adapt to circumstances to respond to stimulation by generating new connection to other synapses, and to respond to deprivation and excess stress. To open these windows of plasticity in the brain is through physical activity. Aerobic exercise via physiotherapy and procedural memory helps the brain to stimulate the release of the substance known as brain-derived neurotropic factor (BDNF), which sets in motion the growth of new synaptic connections and enhances the strength of signals transmitted from neuron to neuron. Assisting tools to evoke neuroplasticity in SCI patients of various classifications have been vigorously used in rehabilitation centres in the world, involving the Bobath Therapy and the Cybernics Technology that fuses human, robots, AI, and Information Systems into the Cyberdyne robotics. The effectiveness remains to give hope to many SCI patients including those in Malaysia.

Keywords: spinal cord injury, neuroplasticity, neurological pathways, rehabilitation, physiotherapy

A Case of Recurrent Accidental Ingestion of Hijab Scarf Needle Pin

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Introduction: Accidental ingestion of needle pin has been reported among tailors and women using hijabs or headscarves. Sharp objects when swallowed, have the potential to cause harm to various areas within the digestive system such as oesophageal, gastric, and intestinal perforation.

Case description: We report a case of recurrent accidental ingestion of a needle pin by a nursing student. It was found to be lodged in the gastroduodenal junction about two hours after ingestion. She was observed in the hospital for four days and was conservatively managed with laxative. At the time of discharge, abdominal Xray showed the needle was in the large bowel, but her general condition was stable. This is her second accidental ingestion of a needle pin within two years. During this latest episode, she accidentally swallowed a needle pin after putting it in between her lips while adjusting her headscarf. She had no history of medical and mental illness. She was discharged home on day-4 with syrup Lactulose (15 ml TDS). She was advised to continue with faeces observation and to return to the hospital immediately if there is any spike in temperature or increased in abdominal pain which may indicate peritonitis. A repeat Xray a month later showed no needle in her body.

Discussion: Like other reported cases, our patient accidentally swallowed her headscarf pin due to the practice of holding needles between the teeth while putting on the wearing headscarves. She was fortunate because the needle was able to pass through her gastrointestinal tract and exit the body though the faeces. Surgical interventions have been reported in other cases. Thus it is crucial to raise awareness about the risks of accidental needle swallowing and emphasize the importance of seeking prompt medical attention in cases of ingestion.

Keywords: accidental, recurrent ingestion, needle pin, hijab, nursing student

OP-20

Pyrimethamine Reduced Tumour Growth in Pre-clinical Cancer Models: A Systematic Review to Identify Potential Pre-clinical Studies for Future Human Clinical Trials

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Introduction: Pyrimethamine (PYR), a STAT3 inhibitor was shown to reduce tumour burden in mice cancer models. It is not clear to what extent the reduction took place and whether the used PYR dosages and route of administration in mice are in line with FDA's recommendations for drug repurposing.

Methods: Search engines like ScienceDirect, PubMed/Medline and other databases including Google Scholar and references list were searched thoroughly. Fourteen (14) articles are included for systematic-review. The risk of bias (RoB) was conducted based on SYRCLE's guideline.

Results: Based on the RoB assessment, 13/14 studies fall under moderate RoB category with one study assessed to have high RoB. None followed the ARRIVE guideline for transparent research reporting. Oral (FDA recommended) and non-oral route of PYR administration were carried out in mice with several studies reported to use very high PYR dosages which could lead to myelosuppression with 30mg/kg and below oral PYR dosages are considered safe. Direct human equivalent dose translation probably is not a perfect strategy to compare whether the used PYR dosages in mice are in line with FDA approved strength because pharmacokinetic profiles especially PYR's half-life ($t_{1/2}$) between human ($t_{1/2}$=96h) and mice ($t_{1/2}$=6h) need to be considered as well.

Conclusion: The studies (4/14) which can be directed for clinical trials are prostate, leukaemia, liver, and oesophagus cancers. Future PYR and non-PYR drug repurposing related preclinical studies should focus on FDA and ARRIVE guidelines, established pharmacokinetic profiles, usage of human cancer related cell lines, combining drug with standard chemotherapy drug/s and dosages of in vitro testing including for Western-Blot probably formulated based on the human plasma concentration of established drug/s and not mainly on non-practical high inhibitory concentration 50 (IC_{50}).

Keywords: Animal models; Cancer; Meta-analysis; Pyrimethamine; STAT3

OP-21

Functional Analysis of Matrix Metallopeptidase-3 (MMP3) Coding Single Nucleotide Polymorphisms in MCF7 Breast Cancer Cells

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Introduction: Due to its role in cancer metastasis, matrix metallopeptidase 3 (MMP3) has been targeted for improvement of current treatment and diagnosis of breast cancer, particularly as biomarker of cancer metastasis. Previously, *in silico* analysis in Malaysian breast cancer patients revealed that several coding single nucleotide polymorphisms (SNPs) of MMP3 were predicted to reduce its mRNA stability and expression, and hence contribute to a lower risk of developing breast cancer metastasis. However, functional predictions made with *in silico* analyses do not often reflect actual biological effects of SNPs due to unforeseen biological intricacies. Therefore, *in vitro* corroboration of biological effects by the genetic variants following *in silico* predictions is extremely crucial.

Objective: The current study aimed to confirm the effects of MMP3 coding SNPs at mRNA and protein levels as well as on cancer invasiveness *in vitro*.

Methods: In this study, plasmids containing wild-type (MMP3-WT) and coding SNPs of *MMP3* (MMP3-Var) were stably transfected into breast carcinoma MCF7 cell line. Then, comparisons of mRNA stability, gene and protein expression levels, and enzymatic activity between MMP3-WT and MMP3-Var were made via quantitative real time polymerase chain reaction (RT-qPCR), Western blotting and MMP3 activity assay, respectively. Finally, the effect of MMP3-Var on cell invasiveness in MCF7 cells was evaluated by Transwell invasion assay.

Results and Discussion: Although there was no difference in gene expression level of MMP3-WT and MMP3-Var, the mRNA stability of MMP3-Var was significantly lower than MMP3-WT. Moreover, protein expression and enzymatic activity of MMP3-Var were also significantly lower than MMP3-WT. Similarly, cell invasion of MCF7 cells transfected with MMP3-Var was significantly reduced.

Conclusion: In conclusion, the effect of *MMP3* coding SNPs towards breast cancer invasiveness was determined *in vitro*. This finding may provide a better understanding between the association of *MMP3* coding SNPs with breast cancer metastasis.

Keywords: Mammary Carcinoma; Metastasis; SNPs; Stromelysin-1

OP-22

The Association between Neutrophil Lymphocyte Ratio (NLR) and Ocular Manifestations among Human Immunodeficiency Virus (HIV) Positive Children

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Introduction: Children with Human Immunodeficiency Virus (HIV) have higher mortality and morbidity rates compared to adults. Nowadays the incidence is increasing rapidly in children throughout the world, in developing countries including Indonesia. It is the fourth cause of death and severe systemic complications in children.

Objective: To determine the relationship between Neutrophil Lymphocyte Ratio (NLR) with ocular manifestations among HIV-positive children.

Methods: A cross-sectional study was done on 25 HIV-positive children at Yayasan Medan Plus, on December 2023. The data were collected not only by interview, anterior and posterior segment examinations but also Schirmer test. The results of the NLR were obtained from medical record data within the last 1 month.

Results: A total samples consisted of 14 boys (56%), and 11 girls (44%). The mean age was 11,64 years. Most of them had normal immune status (88%). The average duration of ARV was 9,56 years with 60% of the children on treatment for 5 to 10 years. The main eye complaints were blurred vision (24%), red eye and pruritus (16%), and watery eye (4%). None experienced dry eyes. The frequency of the anterior segment was conjunctivitis 6%, blepharitis 8%, and corneal cicatrix 4% and the posterior segment was tigroid fundus and nasalization 4%, and retinal detachment 2%. The mean NLR with ocular manifestations was 1,76 (p=0,024).

Conclusion: There was statistical significance between NLR and ocular manifestations.

Keywords: HIV, Ocular, Paediatric, NLR

Enterovirus D68 and Host Immunity: Signaling Insights

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Introduction: Enterovirus D68 (EV-D68) primarily associated with respiratory disease; however, in some rare case, it can lead to neurological disease such as acute flaccid myelitis (AFM), affecting children under the age of 5. AFM patients showed lesions on magnetic resonance imaging (MRI) and cerebrospinal fluid pleocytosis has been observed. This indicates that inflammatory response diffused in grey matter.

Objective: To decipher the neuropathogenesis mechanism, molecular changes and pathways triggered by the EV-D68 infection in the human neuronal cells.

Methods: We analyzed whole genome transcriptomic profiles of EV-D68 infected human neuroblastoma cells (SK-N-SH) comparing with mock at each timepoint of 12 hours, 24 hours and 48 hours.

Results: Data revealed upregulation in pathways associated with immune and inflammatory response towards EV-D68 infection at each timepoint. This finding showed the mechanism of EV-D68 in host immune signaling pathway. 24 genes in host cells significantly upregulated in the early stage of EV-D68 infection (12h) are BST2, CMPK2, DDX60, HELZ2, IFI27, IFI44, IFI44L, IFI6, IFIT1, IFIT3, IFITM1, IRF7, IRF9, ISG15, MX2, OAS1, OAS2, OASL, PARP9, PLSCR1, REC8, RSAD2, STAT1, USP18. These genes are involved in pathways such as NOD-like receptor signaling pathway, Toll-like receptor signaling pathway, RIG-1-like receptor signaling pathway, C-type lectin receptor signaling pathway and other immune pathways.

Discussion: EV-D68 infection induces upregulation of genes and mechanisms involved in immune response against EV-D68. One of the observed phenomena from AFM cases is cerebrospinal fluid pleocytosis, suggesting infection of EV-D68 may be the cause of diffuse immune response in grey matter. To reduce inflammation and immune response triggered by EV-D68, therapeutics targeting immune pathways associated with EV-D68 infection could be a potential antiviral strategy.

Conclusion: EV-D68 infection results in the upregulation of genes, mechanisms, and pathways involved in immune responses in neuropathogenesis.

Keywords: EV-D68, Acute Flaccid Myelitis, Immune response

OP-24

Molecular Docking and In-silico Analysis of miRNAs 23a-5p and 182-5p with RNF38 and BRD4 in Acute Myeloid Leukaemia

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Introduction: Acute Myeloid Leukaemia (AML) is characterized by clonal transformation of hematopoietic precursors due to chromosomal rearrangements and gene mutations, which disrupt the differentiation of hematopoietic cells. Chromosomal rearrangements such as t(8;21)(q22;q22) and 11q23 are associated with distinct prognostic outcomes. The former is known to be predominantly affecting children and exhibiting a favourable prognosis. However, 11q23 rearrangements are mainly observed in adults and are linked to intermediate or high-risk prognostic categories. MicroRNAs (miRNAs) are non-coding RNAs associated with AML. Distinctive miRNA profile in AML is correlated to its prognosis and suggests the characteristic role of miRNA in AML.

Objectives: This study focused on elucidating the involvement of miRNAs in AML pathogenesis, their expression profiles, and their interactions with proteins, aiming to uncover potential therapeutic targets.

Methods: miRNAs 23a-5p and 182-3p were identified from online databases. Protein targets were identified, and molecular docking simulations were performed to assess interaction with Azacytidine and Cytarabine. Validation experiments were conducted using AML cell lines Kasumi-1, THP-1 and U-937 to confirm the presence and differential expression of miRNAs using RT-PCR.

Results: miR-182-5p was significantly expressed in THP-1 cells, while miR23a-5p showed no significant expression in Kasumi-1or THP-1 cells. Proteins RNF38 and BRD4 were identified as common targets of miRNAs 23a-5p and 182-5p. Molecular docking revealed varying binding energies with Azacytidine and Cytarabine, suggesting potential therapeutic implications.

Conclusion: The finding highlights the involvement of miRNAs in AML pathogenesis and treatment response. Targeting miRNAs and their protein interactions could offer novel therapeutic avenues for AML. Further research is warranted to elucidate the mechanistic roles of miRNAs and validate their therapeutic potential in clinical settings.

Keywords: Acute Myeloid Leukaemia, miRNA, Proteins, Molecular Docking, Chromosomal Rearrangement

OP-25

Formulation and Optimization of an Agro Waste Based Culture Medium for Cultivation of Probiotic Bacteria

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Introduction: Probiotics containing beneficial bacteria to enhance the gut health of individuals. Probiotics are produced under various industrial conditions in large quantities and these probiotics are rich in bioactive compounds. Generally used probiotic culture medium contains carbohydrates, amino acids, minerals and other nutrients which are essential for microbial growth. Due to the cost of probiotic production in normal culture medium, the use of agro-industrial by-products is an alternative.

Objective: In this study, an agro waste-based culture medium composed of watermelon and black gram husk (WB medium) for the cultivation of probiotic bacteria such as *Lactobacilli acidophilus* and *Bifidobacterium longum* will be formulated and optimized to prepare a probiotic drink.

Methods: WB medium was formulated and probiotics such as *Lactobacilli acidophilus* and *Bifidobacterium longum* were screened for its growing efficiency in WB medium. Biochemical characterization of propagated bacteria in WB medium was carried out. Its probiotic efficacy was evaluated using *in vitro* testing for bile and acid tolerance.

Results: Using the 72 h fermented aliquot, a beverage was developed. The growth of L*actobacillus acidophilus* and *Bifidobacterium longum* were increased in WB medium in comparison to nutrient broth. The bile tolerance assay showed that both the bacteria were tolerant to bile at 0.3% and the acid tolerance test showed the ability of probiotic bacteria to tolerate acid.

Conclusion: This novel beverage suggests an alternative source of probiotics and could help reduce wastage associated with usual culture medium with efficient management of agro solid waste.

Keywords: Agro waste-based culture medium, *Bifidobacterium longum, Lactobacilli acidophilus,* Probiotics, watermelon and black gram husk (WB medium).

PP-01

Role of Occupational Therapist in Managing Speech Delay in the Local Community – A Case Study

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Introduction: Occupational therapists play a crucial role in addressing speech and language delay in children. They have been acknowledged as leaders in promoting and providing early intervention services to infants and young children with disability in the community. Speech delay is a prevalent developmental disorder, with a higher prevalence in males and potential association with positive family history.

Case presentation: A 2.5-year-old-boy presented to a community health clinic with speech delay. Physical examination did not review any abnormality. Assessment by the occupational therapist showed the patient had good eye contact, able to play with others and follow simple instructions. However, he was only able to speak less than 20 single words and was unable to combine two words. Thus, he was started on a home programme that consisted of oral motor stimulation, speech stimulation through activities of daily living and play therapy. After three months of intervention, he was able to speak more than 50 single words and combine two words.

Conclusion: This case illustrates that prompt assessment and intervention by occupational therapist are vital in providing the best care for children with speech delay. Occupational therapist is an integral part of the community health care team.

Keywords: occupational therapist, speech delay, early intervention, community health

PP-02

Sorbitol Accumulation in Schwann Cells under Prolonged Hyperglycaemic Condition

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Introduction: Glucose is important for metabolic activity both in the peripheral nerve and Schwann cells. In hyperglycaemia, the polyol pathway is activated due to hexokinase saturation by the excess glucose which results in sorbitol intracellular accumulation.

Objective: This study was conducted to determine the sorbitol concentration in Schwann cells following long term exposure to high glucose condition.

Methods: The Schwann cell culture was grown in three different culture medium conditions (25 mM glucose, 100 mM glucose and 100 mM glucose with 1 µM epalrestat) for 14 days. At the end of the experiment, the cells were detached and a cell count was performed. The cells were extracted and the sorbitol concentration was determined using the sorbitol assay kit.

Results: The trend of increasing sorbitol concentration in Schwann cells towards glucose concentration and its reduction due to aldose reductase inhibitor epalrestat was observed; however, this trend was not significantly different between the culture groups.

Discussion: There is a possibility that sorbitol may leak into the culture medium and therefore, are less detectable in the Schwann cells. Schwann cell lines subcultured from primary Schwann cell culture of adult Wistar rat are less sensitive than immortalised adult mouse Schwann cell lines IMS32 towards high glucose induced-polyol pathway activation. Schwann cells at a lower passage number is more reliable as these cells are genetically closer to the *in vivo* Schwann cells compared to immortalised Schwann cells. The genetic materials alteration could have been modified in the immortalised Schwann cells to become more sensitive towards the polyol pathway.

Conclusion: This suggest that intracellular sorbitol detection may be unreliable; and other parameters, such as aldose reductase measurement could be used to demonstrate polyol pathway activation by hyperglycaemia.

Keywords: Hyperglycaemia; Schwann cells; Sorbitol

PP-03

Does Memorizing Quran Affect Brain Activity?

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Introduction: A growing number of empirical studies have revealed that religious practices such as reciting, listening and memorizing Quran beneficial for mental health and affect brain activity. However, the specific benefits of memorizing Quran on brain activity are still limited. The present study aimed to investigate the effects of memorizing Quran on brain waves using electroencephalogram (EEG).

Method: A quasi-experimental study was employed involving 16 right-handed male tahfiz students (memorizers of Holy Quran) and 15 right-handed male non-tahfiz students as control group (mean age = 15). The EEG signal was recorded before (resting state), during and after memorizing Quran. The data was analysed using repeated measures ANOVA.

Results: In tahfiz group, the findings showed that theta wave is dominant before and during memorizing Quran and alpha wave is dominant after memorizing Quran. Whereas in control group, it was found that alpha wave is dominant before, during and after memorizing Quran.

Conclusions: Memorizing Quran could affect brain activity by producing low frequency brain waves which are theta and alpha that lead to relaxation effect. This finding provided evidence demonstrating the potential relaxation and calming effect of memorizing Quran, from a neuroscience perspective, which has important implications for mental health promotions in healthy individuals.

Keywords: EEG, brain waves, religious practices, memorizing Quran, relaxation

PP-04

Quercetin Counteracts Neurodegeneration through Anti-inflammatory Reprogramming of Microglia

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Introduction: In the central nervous system (CNS), microglia regulate homeostasis and play a role in neuroinflammation. Microglia transform into amoeboid phagocytic cells during the inflammatory response, which results in pathogen phagocytosis. Significant morphological and functional alterations are seen in activated microglia, which also release pro- and anti-inflammatory cytokines. Consequently, quercetin inhibits pro-inflammatory cytokines to regulate neuroinflammation processes, promotes neuronal regeneration, and lessens the cell toxicity brought on by oxidative stress in neurons.

Objective: This study used the Griess test to investigate how quercetin inhibits neurodegeneration through its production of nitric oxide.

Methods: 96 well plates will be seeded with control BV2 microglia, stimulated-LPS BV2 microglia, and treated-quercetin BV2 microglia. After seeding, the cells will be transferred to the new 96 well plate and Griess reagent will be added to the new 96 well plate. Lastly, it will be observed using an ELISA plate reader with wavelength 530 nm to check the value of absorbance.

Results and discussion: Nitric oxide production in stimulated-LPS BV2 microglia shows higher production of nitric oxide than the control and treated-quercetin BV2 microglia. Thus, it can be shown that there is activation of microglia using LPS as a stimulator. Meanwhile, as for the treated-quercetin microglia, it shows that a concentration of 1µM produces more nitric oxide than the concentration of 5µM of the treated-quercetin microglia BV2 cell line.

Conclusion: In conclusion, quercetin with 5µM concentration acts as an anti-inflammatory better than 1µM concentration to prevent neurodegeneration as it produces less nitric oxide where nitric oxide is an indicator of the activation of BV2 microglia.

Keywords: Microglia, Neurodegeneration, Quercetin

PP-05

The Optimal Concentration and Time Course of Neurobehavioural Impairment in the Rotenone-induced Parkinson's Disease Model in the Zebrafish Larva

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Introduction: Parkinson's disease (PD) has emerged as a leading cause of disability worldwide, marked by progressive motor symptoms like tremors, postural instability, and bradykinesia. Unfortunately, PD etiology remains elusive due to the complexity of the disease and the challenges of conducting studies with human subjects. Zebrafish *(Danio rerio*) stands as a viable model for studying brain disorders such as PD. While neurotoxins like rotenone are utilized in zebrafish larvae to induce PD-like conditions, determining the ideal concentration and the specific timeline of neurobehavioral deficits remains an ongoing challenge.

Objective: the study aims to demonstrate the effect of different concentrations of rotenone on neurobehaviors at different time points in zebrafish larvae.

Methods: Zebrafish larvae (3 days of post-fertilization, dpf) were exposed to 0.1 % DMSO (control group) and rotenone (1.25, 2.5, 5, 10, and 20 nM), and assessed the locomotor activity, total distance travelled, mean speed and thigmotaxis behaviour at 3, 5, 7, 14 dpf.

Results and Discussion: Behavioural analysis showed that rotenone at 2.5, and 1.25 nM significantly decreased locomotor activity, total distance travelled, and mean speed at 7 dpf. However the motor behaviors started to improve after 7 dpf to 14 dpf. Interestingly, rotenone at 5 and 10 nM concentrations showed a significant impairment of motor activity in zebrafish larvae from 7 to 14 dpf with a moderate mortality rate. Concentration of 20 nM rotenone significantly reduced total distance travelled from 5 dpf as well as locomotor activity and mean speed from 7 to 14 dpf with a higher mortality rate (90 %) at 14 dpf. Finally, rotenone had a significant effect on the anxiety -related behaviour of zebrafish larvae.

Conclusion: The current findings suggest that rotenone at 5 and 10 nM effectively triggers motor symptoms and anxiety associated with PD in zebrafish larvae from 7 to 14 dpf.

Keywords: Parkinson's disease, rotenone, zebrafish, neurobehavioural, anxiety

PP-06

The Effect of Zinc, Cadmium, and Lead Exposure Associated with Neuroanatomical and Neurobehavioral Changes in Zebrafish Model

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Introduction: Heavy metals are common cause of environmental toxicity that affects the health system of human beings.

Objectives: To investigate the role of zinc chloride, cadmium acetate, and lead acetate associated with neuroanatomical and neurobehavioral changes; and to identify the ameliorative effect of ethylenediaminetetraacetic acid (EDTA) and donepezil (DPZ) treatment in Pb-intoxicated zebrafish.

Methods: Total of 120 male adult zebrafish were used in this study. The zebrafish were equally divided into 6 groups: Group 1 (control group), Group 2 (zinc chloride), Group 3 (cadmium acetate), Group 4 (lead acetate), Group 5 (DPZ) and Group 6 (EDTA). The zebrafish in Group 2, 3 and 4 were exposed to heavy metals for 1 hour. As for Group 5 and Group 6, they were exposed to lead acetate for 1 hour. Then, DPZ and EDTA were exposed to the Pb-intoxicated zebrafish for 1 hour in Group 5 and Group 6 respectively. The neurobehavior of the zebrafish was assessed by using Three horizontal compartment, T-maze, Optokinetic Motor Response, Startle Response and Color Recognition tests. The histopathological changes were observed by using light microscopy with H & E staining via sagittal section of zebrafish.

Results and Discussion: The exposure of heavy metals produced significant results in all the behavioral tests and indicated impairment of telencephalon part of zebrafish brain via histopathological slides as compared to control group. The post-exposure of DPZ and EDTA were shown to provide neuroprotective action against Pb-intoxicated zebrafish in all the behavioral tests. Humans might experience similar effects due to heavy metal exposure since humans and zebrafish share 70% of the same genes.

Conclusion: Each heavy metal indicated considerable anatomical and behavioral alterations in the zebrafish. Pb toxicity was ameliorated with EDTA and DPZ via metal chelation and neurotransmitter regulation in the Pb-intoxicated zebrafish.

Keywords: Zebrafish, Zinc, Cadmium, Lead

PP-07

High Concentration of Insulin Induced Insulin Resistance in SKNSH Neuronal Cells

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Introduction: Alzheimer disease (AD) is a type of dementia, a chronic neurodegenerative disorder that causes progressive memory loss and cognitive impairment. Widening evidence supports that AD is an essential component of a metabolic disease with considerable progressive derangements in brain glucose usage and responsiveness to insulin.

Objective: Altered expression of multiple players of insulin signal transduction cascade such as insulin receptor (IR), phosphatidylinositol-3-kinase (Pi3K), and AKT in AD brain, has led to the qualification of AD as a brain-specific form of diabetes which is term "type 3 diabetes". Hyperinsulinemia contributes to insulin resistance and although its effects on peripheral tissues have been investigated, little is known about the molecular events in the brain and whether neurons are subjected to cellular insulin resistance.

Methods: SK-N-SH, a neuronal cell line, which amplifies neuronal function and expresses the component of the insulin signalling pathway, was used to determine how hyperinsulinemia modifies neuronal function. Cells were exposed with different concentrations of insulin (0nM, 100nM, 150nM, 200nM) for 16 hours in serum free medium. Gene expression for IR, Pi3K, GLUT 3, and GLUT 4 were elucidated using real-time PCR.

Results: The results reveal downregulation of IR, Pi3K, GLUT 3, and GLUT 4. Phosphorylation of AKT upon prolonged supplementation of different concentration of insulin was evaluated by Elisa Immunoassay and it showed a decreased in their activities.

Discussion: Prolonged incubation with insulin thus attenuate insulin signalling through desensitizing the IR receptor. In consequence the impairment in the insulin signalling targets such as Pi3K, GLUT 3, GLUT 4 and phospo-AKT it was observed, suggesting prolonged exposure with high concentration of insulin develops insulin resistance in neuronal cells (SK-N-SH).

Conclusion: It can be postulated that prolonged hyperinsulinemia leads to the development of insulin resistance in human neuronal cells (SK-N-SH).

Keywords: Alzheimer Disease, Type 3 Diabetes, Insulin, and SKNSH Neuronal Cell

PP-08

Analysing Neonatal Jaundice Associated with Maternal Alloantibodies at Hospital Raja Permaisuri Bainun, Ipoh, Perak: A Retrospective Study

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Introduction: Haemolytic disease of the foetus and newborn (HDFN) arises from maternal red cell alloantibodies, leading to complications such as neonatal jaundice, intrauterine haemolysis, or severe hyperbilirubinemia when there is a mismatch in red cell antigens between the mother and foetus.

Objective: This study aims to investigate the associations between maternal alloantibodies and various factors contributing to the development of neonatal jaundice.

Method: Conducted as a cross-sectional study, we analysed data from pregnant women with maternal alloantibodies and their corresponding newborns, registered in the Transfusion Medicine Department (TMD) of HRPB between January 1, 2016, and June 30, 2020.

Results: A total of 344 cases of maternal alloantibodies were identified. Significant associations were observed between neonatal jaundice and factors such as Rh typing of mothers, type of maternal alloantibodies, birth weight, maturity at birth, G6PD status, and the presence or absence of infection. Univariate analysis revealed that infants born to RhD negative mothers had 2.4 times higher odds of developing neonatal jaundice ($p < 0.05$; 95% CI [1.413 -3.969]). Additionally, infants born to mothers with clinically significant alloantibodies had 2.1 times higher odds ($p < 0.05$; 95% CI [1.321-3.316]), low birth weight babies (< 2.5kg) had 3.8 times higher odds ($p < 0.05$; 95% CI [1.874-7.781]), premature babies (<37 weeks) had 3.9 times higher odds, and neonates with clinically proven or presumptive infection had 3.3 times higher odds ($p < 0.05$; 95% CI [1.350-8.081]).

Conclusion: Maternal factors contributing to neonatal jaundice included RhD negativity and clinically significant alloantibodies, while neonatal factors included low birth weight, prematurity, and neonatal sepsis.

Keywords: neonatal jaundice, maternal alloantibodies, haemolytic disease of foetus and newborn.

PP-09

Co-existence of Morphoea and Scleroderma with Vasculopathy and Negative Autoantibodies: A Case Report

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Introduction: Systemic sclerosis (SSc) is a multisystem connective tissue disease of obscured etiopathogenesis characterized by skin fibrosis and vasculopathy. SSc is classified into diffuse and limited cutaneous type. Morphoea, is a localized scleroderma (LoS) of primarily cutaneous and subcutaneous tissue involvement with excessive deposition of collagen which lead to fibrosis. Although it has distinct features from SSc, the co-existence of both entities has been recognized. The overlapping of SSc and LoS is rare. The pathogenesis of vasculopathy in scleroderma is still obscured. It is hypothesized that the vasculopathy is mediated by endothelial cell death and loss of capillaries followed by a noninflammatory reactive fibrosis and formation of a neointima.

Case report: A 39-year-old Chinese woman who has been diagnosed absence seizure with narcolepsy and cataplexy for more than 10 years, presented with recurrent non-photosensitive rashes facial erythema, lower limbs, and over her lumbo-sacral area, Raynaud's phenomenon, livedo-reticularis-like rashes on the thighs, occasional oral mucosal ulcer, oligoarthritis, myopathy and hair loss. Skin biopsy from the lumbo-sacral area consistent with morphoea. The ANA was positive, but anti- dsDNA, anti-Scl70, and ANCAs were all negative. The right radial pulse is absent. Thoracic outlet provocation test was negative. CTA showed absence of distal right radial artery. CT scan brain was normal. Nailfold capillaroscopy consistent with scleroderma pattern.

Conclusion: The overlap entity is poorly defined and understood with the unexplainable manifestations. Should investigative resources made available, further immunogenetic tests perhaps may unravel the diagnostic uncertainty.

Keywords: Scleroderma, morphoea, vasculopathy, negative autoantibodies.

Commentary: Considering Nasal Vaccine as an Ultimate Tool to Control Future Coronavirus Pandemics

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The last two decades have witnessed the requirement of the strong mucosal immunity in the upper and lower respiratory tracts, when facing with fatal Betacoronaviruses. The traditional intramuscular (IM) vaccines have induced the strong systemic immune response, but the effectiveness of airway immunity against the coronaviruses may not be the optimal response in this setting if compared to the convalescent SARS CoV-2 cases. Additional essential thing to consider is the viral entry route. The coronaviruses enter through the airway and reach to the systemic. Therefore, efficient viral containment at the respiratory tracts is the best way to prevent further viral induced clinical manifestations. These facts call attention to give vaccine by nasal route instead of IM injection. Several pre-clinical studies have proved the reliability of nasal vaccine induced adaptive immune response. Heterologous prime boosting with intranasal spike protein after intramuscular vaccination is an effective way to establish the tissue resident memory T cells (TRMs) and active B cell response in the lungs. Interestingly, recent study of non-S antigens based nasal vaccine has highlighted the essential of viral specific CD8 T cell response; viral clearance by T cells happens independently of the neutralizing antibodies. In other words, it means the viral specific T cell response is enough to control the coronaviruses in the airway, without requirement of the humoral immunity. These promising current data of nasal vaccines are solely based on non-human primates. Human data are urgently needed. There are some obstacles of the safe usage of nasal vaccine such as vaccination site nearby the central nervous system, and vaccine clearance by airway cilia before it reaches to the lungs. Nevertheless, pursuing an ideal nasal vaccine is indeed the necessity for an efficient manipulation of adaptive immune cells in the airways and lungs.

Keywords: Coronaviruses, nasal vaccine, T cells, airway immunity

PP-11

The Effects of *Jatropha Curcas* Latex Extract on L3 *Aedes Egypti* Mortality

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Introduction: The aim of the study is to determine the larvaciding effects of *Jatropha curcas's* latex extraction against *Aedes aegypti* Stage 3 Larvae (L3). The study also aims to determine the minimum concentration needed for the extraction to show its larviciding effects.

Methods: Latex of *Jatropha curcas* was extracted through water extraction method. Then, latex extraction was submitted for serial dilution in order to get different concentrations such as 2 mg/ml, 5 mg/ml, 10 mg/ml, 20 mg/ml, 30 mg/ml, 40 mg/ml, 50 mg/ml. 4 batches of L3 larvae were then put into each eppendorf tubes with different concentrations(0,2,5,10,20,30,40,50 mg/ml). The larvae motility were observed and recorded for every 6 hours within 24 hours.

Results and Discussion: From the study, we learnt that the minimum concentration needed to stun or kill the larvae is 5mg/ml. In the first six hours, the mortality rate in this concentration was 25%. After another six hours, the mortality rate increases to 50%. The mortality rate of *Aedes aegypti* larvae after 18 hours of exposure to the *Jatropha curcas's* latex extraction was 75% and it remains the same after another 6 hours. So, the minimum concentration that we observe in our research is 5mg/ml and the mortality rate for this concentration was 75%.We also learnt that maximum concentration in our experiment is 30mg/ml. After 18 hours, 87.5% of the third instar level larvae were either dead or stun. After another six hours, all of the L3 *Aedes aegypti* were either dead or stunned making the mortality rate to be 100%. Although the concentration 50mg/ml only cause 87.5% of the L3 *Aedes aegypti* to die or stun in the beginning, all of the larvae had died or stunned after 24 hours. Therefore, we can conclude that the maximum concentration is 40mg/ml. From here, we could also conclude that the higher the concentration of *Jatropha curcas's* latex extraction, the higher the mortality rate of L3 *Aedes aegypti*.Another observation that can be made from this study is that the mortality rate increases over time regardless of the concentration used. This shows that the latex extraction needs time for it to work and the minimum amount of time required is at 12 hours. This was due to the fact that it produces 50% mortality rate using the minimum concentration stated above. Therefore, the minimum concentration required to affect the third instar level larvae will be 5mg/ml or lower. With this concentration, 50% of the larvae were either stun or dead after 12 hours of exposure to the latex extraction. For a better result, further research must be done to find out the lowest concentration to stun the larvae in the quickest time possible.

Conclusion: The *Jatropha curcas's* latex extraction has a very high potential to be a good larvicide due to the fact that it is biodegradeable and also eco-friendly.

Keywords: *Jatropha curcas's , Aedes aegypti* Larvae (L3) mortality.

PP-12

Dengue Dynamics in Kuantan, Pahang Malaysia: an Interplay of Climate Factors and Disease

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Introduction: Dengue fever is one of the most prevalent vector born diseases in the world mainly in tropical and subtropical countries. Its incidence has increased tremendously over the last 50 years. Dengue fever is endemic in Malaysia most probably due to high rainfall especially at the end of the year till February. Other climate factors like humidity and temperature are also likely to have an impact on the dengue fever incidence. This study is to plot the 5-year trend of dengue fever incidence and its association with climate factors which were rainfall, temperature, and humidity.

Material and methods: This was a retrospective study conducted in Kuantan, Pahang, Malaysia. Incidence of dengue fever from 2015 to 2019 was obtained from vector unit of the District Health Office. The average humidity, rainfall, and temperature for the same epidemiology weeks for each year were obtained from Department of Meteorology, Malaysia. Correlation between dengue incidence and all the climate factors was analysed.

Results: Overall trend showed high incidence of dengue fever in year 2015 and 2016 (n= 1724 and 1684 cases respectively). The incidence declined during 2017 and 2018 (963 and 575 cases respectively) and increase again in 2019 (n= 1650). The incidence was fluctuating over the year however it was higher in January, February, November, and December. There was significant correlation between dengue incidence and temperature ($p= 0.028$). Correlations with rainfall and humidity were not significant ($p >0.05$).

Conclusion: This 5-year study on retrospective data showed a significant association of Dengue incidence and temperature, whereby high temperature correlated with low Dengue incidence. Correlation with rainfall was not significant ($p>0.05$), even though the incidence of Dengue was high at the end and beginning of the year which is the rainy season.

Key words: Dengue fever; incidence; humidity; temperature; rainfall.

PP-13

The Effect of Betel Leaf Extract on the Growth of *Candida Albicans*

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Introduction: *Candida albicans* infection of the vagina is one of the commonest fungal which causes distress among women all around the world. In Malaysia, most women will search for relief by going to the doctors or over the counter for anti-fungal treatment. The usual treatment will be Nystatin or Clotrimazole pessary. However, traditionally, women have been known to use Piper betel (Sireh) leaves for quick relief.

Methods: We extracted the active ingredients of Piper betel leaves and tested against lab-grown *Candida albicans* on Potato Dextrose Agar (PDA) and Saboruad Dextrose Agar (SDA). Active ingredients from Piper betel leaves were extracted at concentrations of 0.2545%, 0.1273%, 0.0636%, and 0.0318%, respectively. We also tested chemically produced anti-fungals, Nystatin and Clotrimazole.

Results and Discussion: *The* extract confirmed significant anti-fungal activities against *Candida albicans*. There was also a proportional effect on the anti-fungal activity to the concentration of the extract. In SDA medium, Piper betel extract had a maximum 29.0 mm inhibition zone at 0.2545% concentration. However, 1% Clotrimazole had a slightly larger inhibition zone of 29.3mm (0.3 mm difference). Piper betel antifungal activity on Sabouraud Dextrose Agar (SDA), displayed an average inhibition zone of 29.33 mm with a standard deviation of 1.15. The p-value is 0.000*, indicating a highly significant difference compared to the other samples.

Conclusion: Betel leaf extract has good anti-fungal effects against *Candida albicans* and is comparable to chemically prepared anti-fungal.

Keywords: Anti-fungal activity; Piper betel; *Candida albicans;* Sireh,Candidiasis

Food Insecurities Among College Students in Ipoh, Perak

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Introduction: Dengue fever is one of the most prevalent vector born diseases in the world mainly in tropical and subtropical countries. Its incidence has increased tremendously over the last 50 years. Dengue fever is endemic in Malaysia most probably due to high rainfall especially at the end of the year till February. Other climate factors like humidity and temperature are also likely to have an impact on the dengue fever incidence. This study is to plot the 5-year trend of dengue fever incidence and its association with climate factors which were rainfall, temperature, and humidity.

Material and methods: This was a retrospective study conducted in Kuantan, Pahang, Malaysia. Incidence of dengue fever from 2015 to 2019 was obtained from vector unit of the District Health Office. The average humidity, rainfall, and temperature for the same epidemiology weeks for each year were obtained from Department of Meteorology, Malaysia. Correlation between dengue incidence and all the climate factors was analysed.

Results: Overall trend showed high incidence of dengue fever in year 2015 and 2016 (n = 1724 and 1684 cases respectively). The incidence declined during 2017 and 2018 (963 and 575 cases respectively) and increase again in 2019 (n = 1650). The incidence was fluctuating over the year however it was higher in January, February, November, and December. There was significant correlation between dengue incidence and temperature ($p = 0.028$). Correlations with rainfall and humidity were not significant ($p > 0.05$).

Conclusion: This 5-year study on retrospective data showed a significant association of Dengue incidence and temperature, whereby high temperature correlated with low Dengue incidence. Correlation with rainfall was not significant ($p > 0.05$), even though the incidence of Dengue was high at the end and beginning of the year which is the rainy season.

Key words: Dengue fever; incidence; humidity; temperature; rainfall.

PP-15

Ibifidobacterium bifidum-mediated Changes in Gastrointestinal Tight Junctions - A Review on Possible Underlying Mechanism of Lapatinib-induced Diarrhoea

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Introduction: Lapatinib, a drug targeting ErbB1 and ErbB2 receptor tyrosine kinases, has demonstrated effectiveness in treating ErbB2-positive breast cancer. Despite its efficacy, a notable side effect associated with lapatinib is diarrhoea. Given the prolonged duration of lapatinib treatment, this side effect can significantly impact the quality of life for cancer patients. Previous studies have indicated a decrease in *Bifidobacterium* spp. in tyrosine kinase inhibitor (TKI)-treated patients with diarrhoea, hinting at altered microbial composition, though the precise mechanisms remain unclear.

Objective: This study aims to gather updated information about *Bifidobacterium bifidum* (BB) altering tight junctions in gastrointestinal which could be the underlying mechanism of lapatinib-induced diarrhoea.

Methods: Scopus and Pubmed were searched using the keywords *Bifidobacterium bifidum* combined with lapatinib, diarrhoea, intestinal permeability and tight junction proteins from 2018 to 2023.

Results and Discussion: Out of 191 studies, this review selectively discusses 47 articles from Scopus and 30 out of 59 articles from Pubmed. Overall, the studies highlight the significance of *Bifidobacterium* spp., Gram-positive anaerobes essential for maintaining intestinal homeostasis. Notably, *Bifidobacterium bifidum* plays diverse roles such as regulating the immune system, producing antimicrobials, modulating intestinal flora, and enhancing barrier function. Therefore, alterations in *Bifidobacterium bifidum* induced by lapatinib may influence tight junctions, increasing intestinal permeability and potentially leading to diarrhoea. In several studies, Caco-2 cells were used to elucidate the effect of bacterial exposure and alteration of tight junctions in the gastrointestinal tract due to their ability to spontaneously differentiate into polarised monolayers.

Conclusion: This review provides an outline of the involvement of intestinal barrier, gut microflora and an appropriate *in vitro* model to investigate possible changes induced by lapatinib treatment. Understanding changes that occur in intestinal epithelium following lapatinib treatment will lead to targeted prevention or treatment, enabling effective management of TKI-induced diarrhoea.

Keywords: Lapatinib, *Bifidobacterium bifidum*, diarrhoea, intestinal permeability, tight junction proteins

The Role of Probiotic on Short-Chain Fatty Acids (SCFA) and Interleukin-6 (IL-6) Levels in Mice Model of Chronic Obstructive Pulmonary Disease (COPD)

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Introduction: Inflammation in COPD patients occurs so extensively that it spills over into systemic circulation, which is characterized by high levels of pro-inflammatory cytokines such as IL-6 in the blood, leading to further damage to various organs in the body. Meanwhile, the gut is filled with millions of microbiotas that release metabolites such as SCFA that translocate to the systemic circulation and may potentially reduce inflammation. Probiotics are expected to repair microbiota dysbiosis, thus having a potency to reduce IL-6 via SCFA pathway. **Objective:** To assess the effect of probiotic administration on SCFA and IL-6 levels in COPD mice model.

Methods: Mice C57BL/6 strain were grouped into KN (healthy mice), KP (COPD mice), P1 (COPD mice treated with bronchodilators), P2 (COPD mice treated with probiotics) and P3 (COPD mice treated with bronchodilators and probiotics). Induction of the COPD model was carried out by cigarette-smoking method 2 times a day for 12 weeks. The probiotic used is 26 milligrams of L-Bio (containing 10^9 CFU of bacterial strains/gram). SCFA was measured by gas-chromatography form caecum digesta, and IL-6 was measured by ELISA.

Results and Discussion: SCFA levels at the end of experiment were KN(14.0±4.10), KP(4.8±1.78), P1 (21.5±7.73), P2(35.9±16.3) and P3(31.7±17.49) mmol/L. There were significant differences in SCFA levels among those groups ($p<0.001$). IL-6 levels were KN(13.0±2.24), KP(19.4±6.71), P1(17.9±4.94), P2(13.5±0.43) and P3 (14.3±2.15) pg/mL. There were significant differences in IL-6 levels among those groups ($p=0.03$). There was also a significant association between SCFA and IL-6 levels ($p=0.02$), proving that metabolite produced by gut-microbiota could reduce inflammation not only in the lungs, but also in the systemic level.

Conclusion: Probiotic administration could significantly increase SCFA and reduce IL-6 levels in COPD mice models and thus proving that the Gut-Lung Axis really exists.

Keywords: probiotic, microbiota, metabolite, inflammation, COPD

PP-17

Comparison of the Accuracy of *Blastocystis Hominis* Diagnosis Methods using Direct Examination and Jones Medium Culture: A Systematic Review and Meta-analysis

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Introduction: *Blastocystis hominis* is a unicellular Stramenopile that inhabits the large intestine in humans and other hosts. *Blastocystis hominis* is very common in human samples in developing countries. Meta-analysis of *Blastocystis hominis* diagnosis method is very limited

Objective: To compare the accuracy between direct examination method and Jones' medium culture for the diagnosis of *Blastocystis hominis*.

Methods: a meta-analysis research conducted by collecting articles from PubMed, Science Direct, Cochrane Library, ProQuest, EBSCO, DOAJ and Wiley Library from 2011-2021 that match the inclusion and exclusion criteria. Articles will be assessed using the Newcastle Ottawa Scale and analyzed using Review Manager 5.4.

Results: Of the 1700 articles searched, 4 articles were used for the systematic review and meta-analysis. The results of the Jones medium culture diagnostic test (100% sensitivity and 92% specificity) were higher than direct examination (43.5% sensitivity and 100% specificity).

Discussion: Jones' medium culture shows a better sensitivity compared to direct examination method. This happens because the culture process increases the number of *Blastocystis hominis* in feces samples so that positive findings under microscope examination is more likely to occur.

Conclusion: Jones medium culture is a better diagnostic method for examination of *Blastocystis hominis* than direct examination.

Keywords: *Blastocystis hominis*, Jones media, accuracy comparison

PP-18

The Relationship Between Leukocyte Telomere Length and Cognitive Function and Symptom Severity in Batak Schizophrenia Patients

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Introduction: A number of studies have shown evidence of shortening of leukocyte telomere length in people with schizophrenia. Telomere shortening has been associated with acceleration of the biological aging process of body cells, decreased cognitive function, and increased risk of neurodegenerative diseases and malignancies.

Objective: To assess the relationship between leukocyte telomere length and cognitive function and symptom severity in people with schizophrenia from the Batak tribe

Method: This research is an analytical study with a cross-sectional design using numerical correlative tests. Sampling for research subjects was carried out at the Regional Mental Hospital Prof. dr. M. Ildrem Medan. The leukocyte telomere length analysis examination was carried out at the Prodia Private Clinical Laboratory in Medan City. This research was carried out for 6 months, starting from January to June 2023.

Results: The study included 85 people with schizophrenia from the Batak tribe who were seeking treatment at Rumah Sakit Jiwa Prof. M. Ildrem Medan. Subjects were predominantly male (80%) with a mean age of 30.38 years (SD: 3.2), median age of 30 years (25-35). In cognitive function, the mean MoCA-Ina score was 17.33 (SD: 5.4). Regarding the severity of schizophrenia symptoms, the mean PANSS score was 48.87 (SD: 9.73). The results of the leukocyte telomere length examination showed that the mean T/S β-globin measurement ratio was 0.92 (SD: 0.04), while the mean B4AU T/S measurement ratio was 0.99 (SD: 0.05). There was no significant relationship between leukocyte telomere length and cognitive function ($p>0.05$). A significant relationship was found between leukocyte telomere length and the severity of schizophrenia symptoms, both for the β-globin T/S measurement ratio ($p=0.034$, $r=-0.23$) and for the B4AU T/S measurement ratio ($p=0.037$, $r= -0.227$).

Discussion: The results of this study are in line with a number of previous studies which stated that there is a relationship between the severity of symptoms in schizophrenia and the length of leukocyte telomeres. The shorter the telomeres, the higher the severity of the symptoms and vice versa. This study also shows the possible role of telomere length analysis as a biomarker in assessing the course of the disease and prognosis in people with schizophrenia.

Key words: leucocyte telomere length, cognitive function, symptom severity

PP-19

Knowledge, Attitude And Practice (Kap) Regarding Antibiotic Resistance among Dental and Medical Students in AIMST University, Kedah

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Introduction: Health profession plays a major role in fighting against antibiotic resistance. As the future health profession, it is important to mold the current dental and medical students accordingly.

Objective: A study was conducted to assess the knowledge, attitude, and practices (KAP) of antibiotic resistance among 200 medical and dental students in AIMST University using an online pre-tested questionnaire.

Methods: A cross sectional study was conducted to assess the KAP of the uprising issue of antibiotic resistance among medical and dental students in AIMST University. Data collection was done using an online pre-tested questionnaire. Inclusion criteria: All dental and medical students of AIMST University. Statistical analysis: Descriptive statistics, independent t-test and chi-square test using SPSS Version 25 software.

Results: Knowledge: Medical (54.5%) and dental students (33.5%) have not attained significant results (0.464*). Attitude: Buying oral antibiotics over the counter without a valid doctor's note must be prohibited (0.023). Practice: Before taking antibiotics, I will check the expiry date (<0.00).

Discussion: Both medical and dental students have comparable knowledge on antibiotic resistance, likely due to pharmacology being part of their academic curriculum, but dental students still lack adequate knowledge on the topic. Medical students have more exposure to antibiotic resistance due to frequent deployments to hospitals, where they witness the adverse effects and resistance of antibiotics. There is a disparity in the results of antibiotic resistance between medical and dental students, with medical students showing more positive attitudes and better practice.

Conclusion: Our study provides an insightful perspective regarding the KAP towards antibiotic resistance among medical and dental students in AIMST University, which can be a useful tool to plan the future curriculum to provide a better education which will directly decrease the incidence of antibiotic resistance.

Keywords: antibiotic resistance; knowledge attitude and practice, dental and medical student.

Effects of Cultured Coconut Oil Extract on Inflammatory Markers in Raw264.7 Cells Stimulated with Lipopolysaccharide

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Introduction: Inflammation underlies the pathogenesis of many chronic diseases, and is the target of natural products with health beneficial claims. Cultured coconut oil (CCE) is a local natural product rich in medium chain fatty acids which has been marketed as health supplements. Limited studies have reported its anti-inflammatory effects and its health claims warrant further validation.

Objective: This study aimed to determine the anti-inflammatory activities of CCE using lipopolysaccharide (LPS)-induced RAW264.7 macrophages.

Methods: Cytotoxicity of CCE was determined by MTT assay after exposing RAW264.7 cells with CCE for 24 hours. For inflammation assays, RAW264.7 cells was treated with CCE for two hours, followed by LPS for 24 hours. Nitric oxide (NO) level in the medium was determined with Griess assay. Intracellular inducible NO synthase (iNOS), interleukin (IL)-1β, IL-6, IL-10, tumour necrosis factor-alpha (TNFα) and cyclooxygenase-2 (COX2) levels were determined using enzyme-linked immunoassay kits.

Results and Discussion: CCE exposure for 24 hours did not affect the cell viability up to 62.5 µg/mL. Pre-treatment with CCE (up to 15.625-62.5 µg/mL) significantly reduced the NO and intracellular iNOS level compared to vehicle-treated control ($p<0.05$). At 62.5 µg/mL, pre-treatment of CCE also reduced the IL-6 and TNFα levels compared to vehicle-treated control ($p<0.05$). The COX2, IL-1β, IL-10 levels remained unchanged with CCE pre-treatment ($p>0.05$).

Conclusion: CCE exerts anti-inflammatory effects on RAW24.7 cells by suppressing iNOS, IL-6 and TNFα levels. Further studies are warranted to examine the anti-inflammatory mechanism of CCE and validate its effects in animal models of inflammatory diseases.

Keywords: cyclooxygenase-2, fatty acids, interleukins, inducible nitric oxide synthase, nitric oxide.

PP-22

Treadmill Running Suppressed Breast Cancer Bone Metastasis By Altering Cytokine-Related Systemic Effects Rather Than Direct Osteogenic Response

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Introduction: Breast cancer (BC) bone metastasis often leads to progressive bone damage caused by heightened osteoclastic resorption. Studies show direct bone loading inhibited tumour growth and osteolytic progression in established bone metastasis models mediated by loading-induced osteogenic response. Several preclinical studies showed treadmill running (TR) inhibited primary tumour growth by modulating systemic factors such as inflammatory cytokines and host anti-tumour immunity, but no study has shown whether TR could prevent bone metastases in BC models.

Objective: To investigate whether TR exercise prevent and inhibit bone metastases in BC mouse models.

Methods: Eight-week-old female BALB/c were subjected to TR at 12m/min, 5° incline, 30 min/day, 5 days/week for 1 week. Mice were then randomised into naïve, TR and control groups, with the TR and control groups being intracardially injected with murine 4T1-Luc2 cells and the TR group continued exercise for another 2 weeks. Tumour growth was monitored by bioluminescence imaging. After 3 weeks of running, all mice were euthanized, the femurs were micro-CT scanned and subsequently sectioned and stained for analysis. Bone turnover markers and cytokines were measured in the serum samples and immunohistochemistry staining was performed on the femur sections of the naïve mice.

Results: TR lowered the occurrence of bone metastasis (28%, p=0.0455), prolonged the survival of tumour-bearing mice (67% vs. 33%), reduced bone metastatic tumour burden (36%, p=0.0019) and the percentage of lesion area (53%, p=0.0072) and potentially protected bone against tumour-induced bone loss. In naïve mice, the same TR regimen was not osteogenic, however serum analysis revealed TR lowered the levels of many inflammatory cytokines, including IL-1β, IL-6 and TNF-α. Immunostaining also demonstrated lower expression of IL-1β in the femur of TR naïve mice.

Conclusion: TR could potentially prevent and inhibit bone metastasis via modulation of inflammatory cytokine-related systemic effect rather than direct osteogenic response.

Keywords: treadmill running, breast cancer, bone metastasis, inflammatory cytokines, systemic effects.

PP-23

Immunohistochemical Confirmation Of Vulvular Dermatofibrosarcoma Protuberans

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Introduction: Dermatofibrosarcoma protuberans (DFSP) is a low-to-intermediate grade soft tissue sarcoma of dermal origin having a high local recurrence rate. It usually affects adults between the age group of second and fifth decade. It usually involves the trunk, proximal extremities, head, and neck regions rather than at the vulva region. It is clinically significant being having a high local recurrence rate.

Objective: To find out and discuss on the literature review regarding this tumour occurring in a rare location.

Method: We presented a case of DFSP from a 54-year-old married woman with an exophytic mass at the vulvar region. Multiple sectioning including its surgical margins were thoroughly performed. Histopathological examination with conventional H&E stain as well as immunohistochemical (IHC) procedure using CD 34 stain was applied for the confirmation and differentiation from other possible spindle cell tumours.

Result: We were able to identify a highly cellular lesion running in sheets and parallel bundles. At a first glance it appeared like a spindle cell lesion originated from either smooth muscles or fibrous tissue. Hence, we proceeded with CD34 IHC stain to confirm and exclude other possible differentials. A strong positivity to CD 34 IHC of the lesion was observed.

Discussion: A thorough pathologic assessment with multiple sectioning is an absolute necessity in reporting DFSP occurring in an uncommon region. It is also necessary to express the clearance of its surgical margins to help avoid potential recurrence of the lesion.

Conclusion: The role of immunohistochemistry is an essential procedure in confirmation of DFSP from other possible spindle cell tumours: both benign and malignant lesions

Keywords: Dermatofibrosarcoma protuberans, vulva, immunohistochemistry

Case Report: Caesarean Scar Ectopic Pregnancy

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Introduction: Caesarean scar ectopic pregnancies (CSEP) are a rare form of extrauterine pregnancies. The incidence is increasing given the rise in caesarean deliveries. Similar to other ectopic pregnancies, caesarean scar ectopic pregnancies pose a great risk for maternal morbidity and mortality.

Case presentation: This study presents the case of 29- year-old, patient with previous caesarean delivery presented with amenorrhea, vaginal bleeding and abdominal pain diagnosed as CSEP with transvaginal ultrasound. The patient was treated with conservative management using methotrexate, the treatment was regarded as successful after the expected reduction in serum β human chorionic gonadotrophin (βhCG) levels. Six days after the hospital discharge, the patient was readmitted with hemodynamically unstable and emergency laparotomy with removal of the remained trophoblastic tissue.

Discussion: The CSEP cases presented as a threatened miscarriage, or remain asymptomatic during early pregnancy. The medical treatment may be successful but close monitoring and follow-up even the reduction of serum βhCG levels.

Conclusion: It is important for clinicians and radiologists in management of women with risk factors for a CSEP to maintain a high index of suspicion during pregnancy. We highlight the importance of early diagnosis and treatment of CSEP in this case report. The failure to diagnose and initiate prompt management may lead to uterine rupture, massive haemorrhage and maternal death.

Key words: Caesarean scar ectopic pregnancy, Early diagnosis, Immediate management

PP-25

Association Between Menstrual Period and Sleep Quality Pattern among Secondary School Students in Ipoh, Perak

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Introduction: Lack of sleep has been an ubiquitous issue among women occurring specifically before and throughout menstruation. Menstrual cycle irregularities, heavier bleeding, extended flow duration, and premenstrual dysphoric disorder (PMDD), where symptoms of menstruation such as mood swings, dysmenorrhea (uterine cramps), exhaustion, and irritability can be devastating and have all been linked to sleep problems. In many of the previous studies, menstrual cycle irregularity was associated with worsening sleep quality. In Pennsylvania (USA), women who were categorised under "irregular menstrual period" has shown higher Pittsburgh Sleep Quality Index (PSQI) scores which indicates poorer sleep quality in comparison to women under "regular menstrual period" group. Previous pilot study among students of Adesh University Bathinda also managed to conclude that female students with menstrual cycle irregularities have higher likelihood of having disturbed sleep. However, there are also studies which showed that there were no clear association between these two factors.

Objective: The purpose of this study is to determine the effect of menstrual period and sleep quality pattern among secondary school students in Ipoh.

Method: This was a cross sectional study which was done in May 2023 involving 250 respondents. Convenience sampling was used in choosing the respondents. The study data was obtained through printed questionnaires and analysed using SPSS.

Results: Majority of the respondents had menarche at the age of 10-16 (95.2%) and had duration of menstrual flow of 5-7 days (81.2%). Most of them had irregular menstrual pattern (57.2%) and poor sleep quality index (64.4%). However, when analysed using Chi square test, the p value of association between menstrual cycle irregularity and sleep quality index was 0.611. This means that there was no statistically significant associations between irregularity of menstrual cycle and sleep quality.

Conclusion: This study showed that although most of the respondents had irregular menstrual pattern and poor sleep quality index, there were no statistically significant associations between irregularity of menstrual cycle and sleep quality pattern. (p value >0.05)

Keywords: Irregular menstrual cycle, sleep quality, school students

PP-26

Does BMI have any Effect on Six-Minute Walking Distance When Wearing a Personal Protective Equipment?

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Introduction: Previous studies showed that obesity and overweightness reduce the extent of physical activity due to the limited mobility. The observed mobility limitation cannot be fully attributed to arthritic morbidity, rather physiological factors such as altered movement dynamics, postural control, and pain. Globally, studies have been conducted on healthy adults and found contradicting results on the effects of wearing a Personal Protective Equipment (PPE) and physical activity.

Objective: To find effect of BMI on the walking distance as observed during a 6-Minute Walk Test (6-MWT) wearing different kinds of PPE.

Methods: This study used a quasi-experimental three-group design where pre-test and post-test measurements were recorded. The intervention was standardized 6-MWT. 105 participants aged between 18 to 27 years were randomly assigned to either of three groups (Control, Facemask, PPE) and physiologic parameters such as heart rate, blood pressure, temperature, and oxygen saturation were measured before and after 6-MWT. One-way ANCOVA was performed for comparative analysis.

Results and Discussion: The mean BMI of the Control, Facemask, PPE groups were 22.37±4.63; 23.49±5.07; 22.55±4.50 Kg/ m2 (Range = 16.52 to 37.70 Kg/ m2), while the average distance covered by the groups were 451.41±56.28; 456.28±47.09; 426.59±54.50 meters ($p>0.05$). When controlling for other parameters, the BMI had no influence on the recorded walking distance. In the aftermath of the COVID-19, usage of masks and other respiratory protectors are increasing amongst general population. As Malaysia suffers from high prevalence of obesity, understanding the Body Mass Index (BMI) and its effect on physical activity while using some kind of respiratory protectors is important in developing work-place safety policies.

Conclusion: This study found that BMI had no influence in physical activity while performing moderate physical activity on wearing any kind of PPE.

Key words: PPE, Facemask, physical activity, 6-MWT

PP-27

Investigating the Influence of High Cholesterol Diet and the Therapeutic Potential of Epigallocatechin-3-Gallate on Aged Rats

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Introduction: Aging is caused by the accumulation of damage inflicted by reactive oxygen species which reduces the functions of organs and tissues, such as the heart and thus increases the risk of developing diseases. Intake of high cholesterol diet (HCD) during advanced age significantly increases the risk for life-threatening conditions like atherosclerosis. Therefore, this study aims to investigate the impact of HCD in aged rats and to explore the effect of Epigallocatechin-3-Gallate (EGCG) in the regulation of the antioxidant defense system.

Methods: Aged male Wistar rats were fed with HCD and treated with EGCG (100 mg/kg of body weight per day) orally for 45 days. After the experimental period, rats were sacrificed, and the blood samples were collected in respective test tubes for the separation of plasma and serum samples. Serum lipid and lipoprotein status was determined. The levels of oxidative stress markers, and glutathione (GSH) status were assessed in heart tissue homogenate of experimental animals using standard protocols.

Results and Conclusion: The results showed that EGCG up-regulates the antioxidant status, reduces the levels of serum lipid and lipoproteins, and improves the level of high-density lipoprotein (HDL) in HCD-fed aged rats. This preliminary finding substantiates the antioxidant and anti-hypercholesterolemic properties of EGCG in HCD-fed aged rats.

Keywords: Aging, Reactive Oxygen Species, High cholesterol diet, EGCG.

Three Sets of Siblings with Type 1 Diabetes Mellitus (T1DM): A Case Report

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Introduction: T1DM is the commonest form of childhood diabetes cases. The odds of another sibling of a T1DM patient to get the disease is about 5%, but the risk can be as high as 50% in identical twin.

Case description: The first set of siblings are Malay, both female, have positive family history of type 2 diabetes, and mother had no gestational diabetes (GDM) during both pregnancies. The elder sister presented with moderate diabetic ketoacidosis (DKA) at the age of 5 year and 10 month old, after 2 weeks history of classical diabetes symptoms. She never had autoantibody studies done, but never readmitted for DKA since the diagnosis. 10 years later, her younger sister had diabetes at the age of 11 year and 2 month old, presented with hyperglycaemic symptoms for 2 weeks but no DKA. The insulin autoantibodies were positive.

The second set of siblings are also Malay, both female, have positive family history of type 2 diabetes, and mother had GDM during pregnancy with the younger sibling. The elder sister presented with moderate DKA at the age of 12 year and 8 month old, after a 2 months history of classical diabetes symptoms. She had no autoantibody studies done, but never readmitted for DKA since the diagnosis. 13 years later, the younger sister had diabetes at the age of 8 year and 4 month old, presented with hyperglycaemic symptoms for 4 days but no DKA. She had a raised level of anti-GAD.

The third set of siblings are Chinese, with no family history of diabetes (including GDM). Both siblings had positive autoantibodies study. The elder sister presented with moderate DKA at the age 4 year and 4 month old, after a 1 week history of classical diabetes symptoms. She never had readmission for DKA subsequently. 2 years later her younger brother had diabetes at the age of 4 year and 9 month old, when he presented with similar symptoms for 1 week, but no DKA.

Conclusions: All patients presented with classical diabetes symptoms, but only the elder siblings had DKA at presentation, signaling the maturity of the parents in managing patient with diabetes. Screening with insulin auto-antibodies (and perhaps genetic study) to siblings of a T1DM patient may be helpful in detecting diabetes earlier.

Keywords: Diabetes, Hyperglycaemia, Diabetic Ketoacidosis

PP-29

Assessment of Knowledge of Diabetes Mellitus among Non-Medical Students at a Public University in East Malaysia

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Introduction: Diabetes mellitus, chronic disease is a silent killer pervasive in Malaysia. The rate of diabetes mellitus will likely increase in the future. This cross-sectional study was conducted among University Malaysia Sarawak (UNIMAS) non-medical students to assess their knowledge level towards diabetes mellitus, and to determine whether there is a correlation between their sociodemographic background and their knowledge level.

Materials and Methods: 391 UNIMAS non-medical students participated in this study. The students were chosen randomly from 4 faculties which are Faculty of Business and Economics, Faculty of Social Science, Faculty of Engineering and Faculty of Cognitive Sciences and Management. Data was collected by using structured self-administered questionnaire. Data entry and analysis was done by SPSS.

Results: The mean age of students was 22.4± 1.35 years with male and female ratio was 1:2.37. Highest percentage of respondents were Malays with 42.7%, followed by others (includes Dayak, Iban) 30.4%, Chinese 22.8%, and Indians 4.09%.

The mean score for knowledge of respondents was 26.85 ± 8.135 (57.14%). The highest percentage of correct answers was found with the prevention section (77.29%) and the lowest was the complication section (46.7%). Most respondents gained their knowledge form television (60.6%), while only 15.3% from diabetics friends. Analysis revealed that there is a significant difference between knowledge level towards diabetes mellitus with ethnicity, faculty and year of study ($p < 0.05$).

Conclusion: UNIMAS non-medical students have average and above level of knowledge overall. It was also discovered that family history of diabetes mellitus, year of study, ethnicity and faculty influence the knowledge level towards diabetes mellitus.

Keywords: Diabetes mellitus, Sociodemographics, University students

Effects of Circuit Exercises on Heart Rate and QT Interval among Young Adults in Malaysia

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Introduction: Vigorous exercise can acutely increase the risk of cardiovascular event during or immediately after exertion in young adults. Sympathetic withdrawal with parasympathetic reactivation contributes to heart rate recovery, thus resulting in lengthening of QT interval. An exercise electrocardiogram (ECG) screening is suggested to observe if the circuit exercises can further trigger a more extensive cardiovascular event.

Objective: The study aimed to investigate the immediate effects of circuit exercises on heart rate and QT interval in young adults.

Methods: 100 healthy subjects aged between 18 to 24 participated in this study. All subjects underwent two different circuit exercises: upper limb isotonic circuit and lower limb isotonic circuit exercises. A baseline ECG and post-exercise ECG after completion of each circuit exercise were recorded immediately. Paired t-test was used to compare the pre- and post-circuit exercises while independent t-test was used to compare between pre- and post-upper and lower limb circuit exercise.

Results: The mean heart rate rises significantly after the circuit exercises, and the lower limb circuit exercise increases the heart rate more than the upper limb circuit exercise. The study found a significant ($p<0.05$) decrease of QT interval duration after both circuit exercises of upper and lower limb when compared to pre-exercise values. QT interval duration reduced from 0.33 seconds to 0.30 seconds and 0.29 seconds after the upper limb circuit exercise and lower limb circuit exercises. There was no prolongation of QT interval duration observed after both isometric and isotonic circuit exercises training.

Conclusion: Immediately after the circuit exercise, there are changes of heart rate and QT interval duration. The shortening of the QT interval duration after exercise is due to the increased heart rate. Despite that, the risk of exercise should not be overestimated, and strategies need to be taken to reduce acute cardiovascular event.

Keywords: Circuit exercise, Heart rate, QT interval

The Effect of Celastrol on Body Weight of ApoE Knockout Mice Fed with High-Fat Diet

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Introduction: ApoE knockout (-/-) mice are a genetically modified model that holistically represents human physiology. It tends to gain weight innately and being fed a high-fat diet (Western diet) will accelerate the progression of fat accumulation. The promising drug, celastrol, has therapeutic properties to reduce weight in many animal models.

Objective: This study aims to determine celastrol's effect on body weight in the ApoE -/- mice fed the high-fat diet model. Methods: Two groups (n=5 per group) of mice at eight weeks of age were fed high-fat diet for 12 weeks. Mice were treated with celastrol daily at 2 mg/kg body weight (BW) intraperitoneally (IP). At the same time, the control group was treated with 2% DMSO as vehicle IP daily during the last four weeks of high-fat diet. Mice's body weights were recorded weekly using an animal weighing scale with standardization in gram units. At 20 weeks, the mice were sacrificed with an anesthetic cocktail of ketamine-xylazine. Data were then analyzed using GraphPad Prism 10 (GraphPad Software, Inc., USA) using a paired t-test.

Result: The result showed an increase in body weight for both groups that were fed with HFD, which is supported by many previous literature on the effect of HFD on body weight. Interestingly, the celastrol administration reduced body weight in ApoE -/- mice fed high-fat diet significantly compared to the control group. by which most studies focus on different animal models, drug routes, and doses.

Conclusion: More studies are required to elucidate the optimum dose of celastrol in this model, and the outcome could be extrapolated to those at a greater risk for weight gain. In addition to this, more studies are required to scrutinize the mechanism of celastrol.

Keywords: ApoE knockout mice, high-fat diet, celastrol, body weight

PP-33

Therapeutic Effects of MicroRnas on Nonalcoholic Fatty Liver Disease (NAFLD) and Nonalcoholic Steatohepatitis (NASH): A Systematic Review and Meta-Analysis

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Introduction: Nonalcoholic fatty liver disease (NAFLD) is rapidly becoming a global health crisis, notably affecting younger populations due to unhealthy lifestyle choices. If left unchecked, it can progress to nonalcoholic steatohepatitis (NASH), leading eventually to liver cirrhosis and hepatocellular carcinoma.

Objective: The central aim of this systematic review is to amass and present existing knowledge regarding miRNA-based therapeutic strategies for NAFLD/NASH in the past decade.

Methods: Both a systematic evaluation and a meta-analysis were undertaken, adhering to PRISMA guidelines. Rigorous searches across databases, including PubMed, Cochrane, and Scopus, were executed to source pertinent articles.

Results: Across the studied literature, 56 unique miRNAs were identified as potential therapeutic agents. Notably, the miRNA-34a antagonist/inhibitor was most frequently examined (n= 7). The meta-analysis showcased its significant efficacy in ameliorating hepatic parameters, such as total cholesterol, total triglyceride, AST, and ALT levels.

Discussion: The miRNAs' role in modulating processes like hepatic fat accumulation, inflammation, and fibrosis underscores their therapeutic potential. Specifically, the miRNA-34a antagonist has been spotlighted as a notably potent agent for NAFLD/NASH treatment.

Conclusion: The burgeoning realm of miRNA-based therapies, with an emphasis on miRNA-34a antagonist, provides a promising frontier for NAFLD/NASH therapeutic interventions. Continued research will further elucidate their clinical viability.

Keywords: NAFLD; NASH; miRNAs; Therapeutic interventions

PP-34

Systematic Review: miRna Expression in Coronary Artery Diseases (CAD) as a Potential Biomarker

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Introduction: Coronary Artery Diseases (CAD) have consistently become the primary global cause of mortality. There has been extensive research exploring the potential of miRNAs as diagnostic indicators in CAD. This systematic review examines the expression of miR-21 focusing on their relevance to CAD across the studies.

Methods: We systematically searched Scopus for original research on miR-21, Coronary Artery Disease (CAD), atherosclerosis, and related pathways. Following PRISMA guidelines, 21 articles were found and screened using specific criteria: exclusion of non-CAD studies, unrelated microRNA research, reviews/editorials, and studies lacking targeted pathway analysis. The whole text of 6 articles were reviewed and only 3 articles met the standards for assessing miR-21 as a potential CAD biomarker.

Results: miR-21 shows significant upregulation in atherosclerotic plaque samples and CAD patients across these 3 articles, thus impacting various cellular pathways and functions. Studies highlight its involvement in vascular smooth muscle cell (VSMC) proliferation by targeting NOTCH2 and Jag1 genes. Additionally, its correlation with PTEN expression in peripheral blood mononuclear cells (PBMCs) suggests potential implications in angiogenesis and cell-cell adhesion relevant to CAD. Furthermore, its regulatory role in CD4+CD25+FoxP3+ regulatory T cells (Treg cells) via a TGF-β1/SMAD-independent pathway emphasize the impact on immune modulation in the context of CHD. However, the diverse study populations and CAD groups demonstrate that miR-21 expression patterns vary across the disease severity and stages in CAD. The bias selection of miRNA and target genes in most of the studies, and the variable study population may be the limitations of these studies, indicating the need for further research.

Conclusion: miR-21 expression patterns across different disease severities and stages in CAD, indicating its potential biomarkers and therapeutic target in disease progression. Variability in study populations underscores the need for future research to validate the current findings.

Keywords: Coronary artery disease, microRNA, biomarkers, gene pathway, targeted therapy

PP-35

Association of BMI and Gender with Physical Activity among Young Adults

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Introduction: According to World Health Organisation (WHO), regular physical activity helps to prevent and treat noncommunicable diseases, to maintain healthy body weight, improve mental health, quality of life and well-being. Time management, mental health issues and excess body weight are some factors that may cause lack of physical activity among young adults. Approximately 31% of the global population aged ≥15 years engages in insufficient physical activity, contribute to approximately 3.2 million death every year.

Objective: The aim of the study is to analyse the relationship between BMI and gender with the current state of physical activity among young adults.

Methods: This cross-sectional study included the undergraduate students in UniKL-RCMP. The sample size calculated, and the sampling was done randomly. A set of online questionnaires was given to 155 participants, included three parts containing consent form, socio-demographic data, and details of physical activity. All the variables were computed and analysed in SPSS 26.0 using appropriate statistical tests where $p<0.05$ was considered as significant.

Results and Discussion: Out of 155 respondents, 32.9% were male and 67.1% were female. The highest percentage were 'inactive' (51%) and 39% were 'minimally active' while only10% were doing 'Health-Enhancing-Physical-Activity' (HEPA). Two most common reasons were 'Insufficient Time for Exercises' (65%) and 'Lack Self-Motivation' (61%) and the least common reason was 'Fear of Injury/Recent Injury' (21%). Physical activity was associated with gender ($p<0.05$) but no significant association with BMI.

Conclusion: Most of the participants were with normal weight (56%) and half of them were inactive. Overweight and obese were 21% but none of them involved in HEPA which could cobtribute their excess weight. Females were mostly inactive, and males were mostly minimally active. Hence more physical activity is warranted to these young adults to avoid future health issues.

Keywords: Physical activity, body mass index, female, male

Outcomes of Femoral Neck Fractures treated by Cannulated Screw Fixation

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Introduction: Fractures of neck of femur have always presented great challenges to the orthopaedic surgeons. In many ways today the unsolved fractures are as far as treatment and results are concerned. The result depends upon the extent of injury, adequacy of reduction and fixation. Fixation with cannulated screws is usually adequate for femoral neck fractures.

Objective: The aim of this study is to observe the outcome of cannulated hip screws fixation in femoral neck fracture in Mandalay General Hospital and Mandalay Orthopaedic Hospital.

Materials and Methods: Thirty patients with femoral neck fractures were treated with cannulated hip screws. They were prospectively studied for 24 weeks after surgery. Outcome analysis included standard clinical follow up, Harris's hip score for function, union rate and complications.

Results: Most of the cases were between 18 - 30 years of age group. Twenty nine out of thirty patients showed union at 24th week. For functional outcome by using Harris's score, 76.67% achieved excellent and good results, 20 % achieved fair and 3.33% achieved poor results at 24th week. Regarding the complications, one case of implant failure occurred in this study. There was no other complication, no avascular necrosis observed in the study period.

Conclusions: To conclude by the usage of multiple cannulated hip screw, compressing effect at the fracture site is achieved, it also avoids redisplacement and rotations. Cannulated hip screws fixation for femoral neck fractures is an easy, safe, and useful procedure with encouraging results.

Keywords: Femoral neck fracture, Cannulated screw fixation, injury

PP-37

A Case of Painful Connections: a Rare case of Vesicocolic Fistula

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Introduction: Enterovesical fistula (EVF) is uncommon, cancer of colon being the commonest cause, and the others being inflammatory, iatrogenic and trauma. The commonest type of EVF is colovesical; others rectovesical, ileovesical, and appendicovesical.

Case description: A 61-year-old Malay male was admitted for cystoscopy and bilateral retrograde pyelogram (RPG) and stenting with open vesicolithotomy and sigmoid colectomy. He had underwent laparoscopic bilateral hernioplasty 10 years earlier, and a couple of years later, was found to have urinary bladder stone but refused hospital treatment; opting for traditional medicine. He later presented with 4-day suprapubic swelling and 2-week constipation. Colonoscopy and cystoscopy showed no evidence of fistula, but abdominopelvic CT scan suggest vesico-colic fistula. He was treated with continous bladder drainage (CBD) silicone; changed twice weekly until fistula dries up. A plan was made for an open vesicolithotomy but cancelled as his stoma was swollen with 3-day prolapse. The stoma progressively increased in size and stoma refashioning was done. Months later, he had stoma prolapse though still functioning. He complaint of passing out stone fragments in the CBD. Later, cystogram showed distension of the urinary bladder with irregular wall thickening and perivesical fat stranding. Large, calcified density seen in the bladder with fistulous communication between anterior bladder wall with adjacent sigmoid colon, but no evidence of intraperitoneal collection. Prostate is enlarged. CT scan showed vesico-colic fistula with large bladder calculus.

Discussion: When RPG stenting and open vesicolithotomy and sigmoid colectomy was finally conducted, intraoperative findings found stone embedded within the mesh and the mesh has eroded into the bladder from left side into the left anterior bladder; the mid sigmoid colon herniating into left inguinal internal ring and into the inguinal canal with mesh erosion into the anterior bladder with associated large, impacted bladder stone occupying almost the entire bladder. This is indeed a rare case of EVF which came from vesical calculus and aggravated by a prolene mesh from earlier hernioplasty.

Keywords: enterovesical fistula, vesico-colic fistula, vesical calculus, hernioplasty, prolene mesh

PP-38

Comparison of Facial Anthropometry among Iban, Malay and Chinese Young Adults in Sarawak

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Introduction: Facial anthropometry is crucial in the identification and determination of racial origin and sex. The study of facial anthropometry is practical in plastic and maxillofacial surgery. orthodontic diagnosis, forensic medicine, and many other practical applications. The aim of this project was to determine and compare the anthropometry of faces among Iban, Malay, and Chinese young adults in Sarawak.

Materials and Methods: This study involved 180 young adults, aged 18 to 25, with 30 males and 30 females from each ethnic groups (Iban, Malay, and Chinese). For each subject, the facial height, facial width, subnasal length, and bigonial width were measured using a manual Vernier calliper at the precision level of 0.1mm.

Results: Based on this study, the mean facial index of Iban, Malay, and Chinese was 75.0 ± 6.02, 76.4 ± 5.71, and 75.9 ± 6.47, respectively, implying the dominance of the euryprosopic face type. The subnasale-gnathion and bigonial width were the facial parameters that showed significant differences ($p<0.05$) between the three ethnic groups. No significant difference was found in facial indices ($p > 0.05$) between three combined ethnic groups, between two compared ethnic groups. However, between Iban and Chinese, the differences in Subnasale-gnathion, bigonial width, and facial height were very significant.

Conclusion: There were significant differences in all facial parameters between genders within each ethnic group, with males having a higher mean value than females. Within ethnicity, all three showed that males had a higher frequency of samples with an euryprosopic facial phenotype compared to females. The results proved sexual and ethnical dimorphisms in facial anthropometry. The data obtained may be useful for further anthropological, forensic, and genetic research, as well as in medical clinical practice.

Keywords: Anthropometric measurements, face, comparison, Ethinicities, Sarawak

Unveiling Trends: A Bibliometric Exploration of Massage Literature and its Influence on Managing Muscle Soreness

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Introduction: Massage therapy is a popular form of alternative medicine that has been used for centuries to alleviate muscle soreness and promote relaxation. In recent years, there has been a growing interest in understanding the scientific basis behind the effectiveness of massage in managing muscle soreness.

Objective: This bibliometric research aims to explore relations of massage on muscle soreness trends over time.

Method: This research employs descriptive bibliometrics to gather scientific production data from the Scopus and Web of Science online databases. The analysis was conducted using Scientopy and VoSviewer. A query string, specifically "massage" AND ("muscle soreness" OR "muscle pain"), was employed, resulting of 526 papers. After eliminating 159 papers, a total of 367 papers were selected for comprehensive examination in this study.

Results: Over the span of 46 years, the publication output was reached in 2020 with 32 published papers. The most cited paper, published in 2003 was 888 citations. The United States emerged as the predominant contributor with 88 publications and 2,752 citations, surpassing other countries. A comprehensive examination of 1,997 keywords with a minimum co-occurrence of 20 revealed 35 keywords meeting the established threshold. Overlay visualization indicated an evolutionary pattern between 2010 and 2020, highlighting shifts in research focus. Towards the end of 2020, there was a surge in interest regarding the reliability and effectiveness of sports massage, cold-water immersion, and self-myofascial release in improving muscle soreness, motion, and flexibility.

Discussion: The analysis conducted indicates a consistent global increase in contributions to the understanding of the relationship between massage and muscle soreness. However, a notable decline in interest suggests a potential shift towards investigating other factors associated with massage.

Conclusion: The findings underscore the need for ongoing investigation and exploration to comprehensively understand the evolving dynamics of the relationship between massage and muscle soreness.

Keywords: Bibliometric, Massage, Muscle Soreness, Physical Therapy, Recovery

PP-41

Unveiling the Evolution of Osteoarthritis and Physical Therapy Studies over Time: The Longitudinal Landscape

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Introduction: Osteoarthritis is a degenerative joint disease-causing pain, stiffness, and reduced mobility. Physical therapy is effective in managing symptoms and improving quality of life but understanding role have evolved over time.

Objective: This bibliometric research aims to explore the longitudinal landscape of osteoarthritis research and physical therapy studies, shedding light on how our knowledge and approach to this condition have developed over the years.

Method: This research employs descriptive bibliometrics to gather scientific production data from the Scopus and Web of Science online databases. The analysis is conducted using Scientopy and VOSviewer software.

Results: This article analyses 368 studies on physical therapy interventions for knee osteoarthritis over 71 years. The United States is the primary contributor, with 73 articles and 3,011 citations. Australia and UK share more documents, while China contributes over 50%. The most-cited paper in 2005 had 530 citations. Top 10 articles were published by conducting 8 randomized controlled and 2 are systematic review. With minimum 20 co-occurrence of 1387 keywords with full counting were analysis, 30 keywords meet the threshold. Overlay visualisation suggested range of 2012 to 2018 to show the evolution pattern of the keyword.

Discussion: China proved their publication will affect this topic despite their late debut. Exercise in physical therapy for hip osteoarthritis pain and disability in older adults have been studied recently. The essay emphasizes outcomes, recommendations, guidelines, and reliability in physical therapy intervention improvement. This shows a growing research environment for knee osteoarthritis. These studies' results show a commitment to advancing knee osteoarthritis physical therapy research and clinical practice.

Conclusion: This review shows the evolution of knee osteoarthritis physical therapy research. Diverse country contributions, prolonged influence of significant studies, and evolving research focus provide a rich and dynamic body of information that will change knee osteoarthritis research and clinical practice.

Keywords: Bibliometric, Osteoarthritis, Physiotherapy, Rehabilitation, Manual therapy

Association between Screen Time Gaming and Musculoskeletal Pain among Recreational E-Sport Player

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Introduction: E-sport is referring to the community of gamers who play video games primarily for the purpose of entertainment that can cause musculoskeletal pain. However, studies focus on screen time gaming in relation to musculoskeletal pain is still underexplored.

Objective: This study aimed to determine the association between screen time gaming and musculoskeletal pain among recreational e-sport players.

Methods: A cross-sectional study was employed involving 313 recreational e-sport players (mean age: 22.18±2.30) using convenience sampling technique. The questionnaires consisted of screen time spent and modified Nordic Musculoskeletal Questionnaires. The chi-square test was used to determine the correlation between screen time spent and musculoskeletal pain.

Results: There was a significant correlation between screen time spent in gaming and musculoskeletal pain, particularly in the neck ($p = 0.004$), wrists/hands ($p = 0.001$), and lower back ($p = 0.001$) over the course of the previous 12 months and the previous 7 days ($p = 0.004$, 0.001, and 0.001 respectively).

Conclusions: Screen time gaming was correlated with musculoskeletal pain in the neck, wrists/hands, and lower back area suggesting the e-sports community needs to be exposed to proper ergonomics so that they can spend less time sitting and performing repetitive motions.

Keywords: E-sport, Time Screen Gaming, Musculoskeletal Pain

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Relationship between Ankle Sprain Injury on Functional Ankle Instability among Malaysian Professional Football Players

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Introduction: Ankle sprains are common injuries in the field of professional football and had a relation to athlete's performance and daily activities.

Objectives: To examine the effect of ankle sprain on functional ankle instability among Malaysian professional footballers with a history of ankle sprain.

Methodology: A cross-sectional study was conducted on 90 football players. An identification functional ankle instability and lower extremity functional scale were used to assess the relation of ankle sprain injury on ankle instability status and functional activities. The results were analysed using SPSS version 26.

Result: Ninety male players participated in this study. The median age and body mass index of the participants were 25.22 ± 2.525 years and 22.79 ± 0.54 kg^2/m. The frequency of ankle sprain participants in this study was 2.09 ± 0.843. The majority of participants were defenders (46.7%), followed by midfielders (34.4%), goalkeepers (12.2%), and strikers (6.7%). Most Malaysian professional footballers with a history of ankle sprain injuries had ankle instability (56.67%). The frequency of ankle sprain had a significant value towards ankle instability status ($p = 0.016$) but not in LEFS total score ($p = 0.126$).

Conclusion: The findings of this study show a significant association between a history of ankle sprains and functional ankle instability status. Comprehensive rehabilitation and preventive techniques can minimise the negative impacts of functional ankle instability, improving professional players' performance and well-being.

Keywords: ankle sprain, ankle instability, functional impairment, rehabilitation, return to play

Effects of Resveratrol Supplementation on Biochemical Markers and Joint Structure in Preclinical Models of Osteoarthritis: A Systematic Review and Meta-Analysis

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Introduction: Osteoarthritis (OA) stands out as the predominant age-related joint disease worldwide. The presence of persistent inflammation within joint spaces is theorized to underlie OA. Resveratrol, recognized for its anti-inflammatory and antioxidant properties, possesses the capacity to impact cartilage metabolism through diverse signaling pathways.

Objective: This systematic review and meta-analysis aimed to outline the therapeutic impacts of resveratrol in OA animal models.

Methods: In May 2023, an exhaustive literature search encompassing PubMed, Embase, Web of Science, Cochrane Library, China National Knowledge Infrastructure, China Wanfang, and VIP databases was conducted. Studies, written in English or Mandarin, exploring resveratrol effects in animal OA models from the inception of databases until the search date were considered.

Results and Discussion: Fifteen eligible studies underwent analysis, revealing that resveratrol effectively inhibited the secretion of interleukin-1β, tumor necrosis factor-α, interleukin-6, nitric oxide, and apoptosis of articular chondrocytes. Additionally, joint structure, as indicated by the Mankin score, exhibited restoration with resveratrol in animal OA models.

Conclusion: Resveratrol emerges as a potential therapeutic remedy for OA based on findings from animal studies. However, substantiation of its clinical efficacy necessitates further evidence from well-planned human studies.

Keywords: arthritis, chondrocytes, joint, stilbenoid, subchondral bone

PP-45

Prediction of Musculoskeletal Injury Risk Factors among Competitive Archers

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Introduction: Archery is a static sport that demands trunk and upper extremity strength and endurance and exerts asymmetrical loads on the body. Although archery has a minimal injury risk compared to contact sports, prior research has revealed that archers may be more prone to getting injured than predicted.

Objective: The current study aims to predict the risk factors for musculoskeletal injuries among the competitive archers.

Methods: This cross-sectional study recruited 165 Malaysian archers aged 18–40 years. The Standardized Nordic Questionnaire, Pittsburgh Sleep Quality Index, and Depression Anxiety Stress Questionnaire-21 were used to screen participants. The risk variables that were independently associated with musculoskeletal injuries were determined employing a multinomial analysis using logistic regression.

Results and discussion: Injury risk increased 1.112 times with age (OR = 0.899, CI = 0.813-0.955, $p<0.05$). After-training cooldowns were similarly associated with injuries (OR = 6.729, CI = 1.880–130.02, $p<0.05$). Injury risk during training (OR = 20.014, CI = 3.080-130.02, $p<0.05$) and competition (OR = 0.262, CI = 0.076-0.905, $p<0.05$) was 0.05 and 3.812 times, respectively. Archers had a 0.05-fold risk of musculoskeletal injury from accumulation/overuse injury (OR = 22.676, CI = 3.3310-155.36, $p<0.05$). Sleep quality (OR = 0.421, CI = 0.191-0.927, $p<0.05$) was similarly associated with archer injuries at 2.138 times. In comparison to contact or strength-based sports, archery has been depicted as a low-risk sport. However, a high load volume and regular, monotonous activity during archery sports cycles have been linked to musculoskeletal pain, and archers may report more injuries than expected.

Conclusion: The current study found that archers' musculoskeletal injuries are related to age, cool-downs, training and competition period, overuse injury, and sleep quality. By promptly identifying musculoskeletal injuries and risk factors in archery, coaches may reduce the duration of rehabilitation, enhance performance, facilitate resumption of sports activities, and avoid re-injury.

Keywords: Archery, Musculoskeletal injury, Prediction, Risk factors, Athletes

A Study on the Risk and Protective Factors of Suicidal Ideation among Medical and Non-Medical University Students in Ipoh, Perak: A Cross-Sectional Study

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Introduction: Suicidal ideation is highly affected among the university and college students than the general population. This may be due to the various challenges faced by the students. For instance, they are exposed to academic and social pressure, financial distress, and their ability to adapt to new environments. Few protective factors have been recognized to oppose the development of suicidal ideation.

Objective: This research aimed to determine the risk and protective factors of suicidal ideation among medical and non-medical university students in Ipoh Perak.

Methods: This cross-sectional study was conducted in three universities and included a total of 280 respondents (Male:107 and Female: 173). One stage structured assessment was created based on depression Anxiety Stress Scale 21 and Suicidal Behavior Questionnaire-Revised was carried out. Data analysis was completed using Microsoft Excel and IBM SPSS version 23.

Results: Overall prevalence of suicidal ideation was 17.5%. The self-satisfaction index in academic performance was the only sociodemographic associated with suicidal ideation while all the risk factors (Cyberbully, alcohol consumption, physical abuse, pre-existing mental illness and depression) were associated with suicidal ideation. Few protective factors (good family bonding and help-seeking behavior) were found to be associated with reducing risk of suicidal ideation.

Conclusion: The prevalence of suicidal ideation among university students was high and needed to be addressed. There was an association between academic satisfactory index and suicidal ideation. Measures needed to be taken for early identification and intervention to improve quality of life among university students.

Keywords: Risk; Protective factors; Suicidal ideation; University students; Ipoh

PP-47

Pandemic Related Stress among Private Health Care Workers during Third Wave of COVID-19

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Introduction: During the COVID-19 pandemic, the stress level for all health care workers are expected to rise for uncertainty of treatment plan, prognosis of patient, complications, infestation with virus, prolong working hours, isolation from family and insufficiency of personal of protective equipment.

Objective: This study aimed to determine the degree of stress, the causes that precipitating stress and the ways to relieve it among the private healthcare workers in Malaysia.

Methods: The cross-sectional descriptive study was conducted for four weeks by simple random sampling of private health care workers (medical doctors, nurses and other staffs) in selected hospitals and clinics within Malaysia. An online survey was conducted for 147 consented individuals using Google Forms to determine Depression Anxiety Stress Scale 21 (DASS-21) scores for stress level determination. The data was then analyzed by using SPSS version 22.

Results and discussion: The calculated DASS-21 score expressed the existence of severe stress (4.08%), moderate stress (6.80%), and mild stress (13.61%) in the sampling population. Majority of sampling populations (74.83%) expressed normal level of stress. The precipitation factors for stress represented (49.66%) for positive case announcements on media, (46.66%) for fear of spreading infection to the family, (44.22%) for close contact with positive cases, (40.14%) for spending less time with family, (39.46%) for frequently overtime working, and (35.37%) for wearing of Personal Protective Equipment (PPE). The major stress relievers represented (61.22%) for sleeping and (48.98%) for using social media.

Conclusion: Private health care workers including doctors, nurses and other staffs expressed certain level of stress during third wave of COVID-19 pandemic although majority is not significantly affected. The positive case announcement on media is the major precipitating factor of COVID-19 pandemic related stress in health care workers.

Key words: Stress, Health care workers, COVID-19 pandemic

PP-48

The Relationship between Leukocyte Telomere Length and Cognitive Function and Symptom Severity among Batak Schizophrenia Patients

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Introduction: A number of studies have shown evidence of shortening of leukocyte telomere length in people with schizophrenia. Telomere shortening has been associated with acceleration of the biological aging process of body cells, decreased cognitive function, and increased risk of neurodegenerative diseases and malignancies.

Objective: To assess the relationship between leukocyte telomere length and cognitive function and symptom severity in people with schizophrenia from the Batak tribe

Method: This research is an analytical study with a cross-sectional design using numerical correlative tests. Sampling for research subjects was carried out at the Regional Mental Hospital Prof. dr. M. Ildrem Medan. The leukocyte telomere length analysis examination was carried out at the Prodia Private Clinical Laboratory in Medan City. This research was carried out for 6 months, starting from January to June 2023.

Results: The study included 85 people with schizophrenia from the Batak tribe who were seeking treatment at Rumah Sakit Jiwa Prof. M. Ildrem Medan. Subjects were predominantly male (80%) with a mean age of 30.38 years (SD: 3.2), median age of 30 years (25-35). In cognitive function, the mean MoCA-Ina score was 17.33 (SD: 5.4). Regarding the severity of schizophrenia symptoms, the mean PANSS score was 48.87 (SD: 9.73). The results of the leukocyte telomere length examination showed that the mean T/S β-globin measurement ratio was 0.92 (SD: 0.04), while the mean B4AU T/S measurement ratio was 0.99 (SD: 0.05). There was no significant relationship between leukocyte telomere length and cognitive function ($p>0.05$). A significant relationship was found between leukocyte telomere length and the severity of schizophrenia symptoms, both for the β-globin T/S measurement ratio ($p=0.034$, $r=-0.23$) and for the B4AU T/S measurement ratio ($p=0.037$, $r= -0.227$).

Discussion: The results of this study are in line with a number of previous studies which stated that there is a relationship between the severity of symptoms in schizophrenia and the length of leukocyte telomeres. The shorter the telomeres, the higher the severity of the symptoms and vice versa. This study also shows the possible role of telomere length analysis as a biomarker in assessing the course of the disease and prognosis in people with schizophrenia.

Key words: leucocyte telomere length, cognitive function, symptom severity

PP-49

A Study on the Awareness Regarding e-Cigarette Usage among University Students in Malaysia

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Introduction: The study was conducted to determine the awareness and usage of E-cigarettes among university students and to educate them on the negative impact on their usage. Respondents aged between 18 to 26 years old participated from eight universities. There are significant health concerns that correlate with students' awareness and knowledge about e-cigarettes and its negative effect. Hence, a study on awareness of about e-cigarettes was conducted and was necessary to explore and do this research as students are the future prospects of Malaysia.

Objective: To assess the awareness of usage of e-cigarettes among Malaysian university students.

Methods: It is cross-sectional descriptive study with students from 8 different universities. The sample size with 95% confidence level was calculated as174. A non-probability convenience sampling method was employed. The data collection and analysis was done using a Google Form with questions subdivided into four sections - Section A consists of basic data collection questions, Section B consisted of questions on social demography, knowledge and level of awareness on usage of e-cigarette, Section C on their current smoking status, and Section D questions on their attitude towards usage of e-cigarette.

Results: From 176 respondents, 71 were female and 100 were male respondents, while 5 respondents did not prefer to talk about their gender. We managed to determine the knowledge of respondents about e-cigarettes. Findings show there is an association between the usage of e-cigarettes and coping of the students with their study stress. The students knew about e-cigarettes mostly from their friends and the internet.

Conclusion: The aim of this research was to evaluate health awareness of e-cigarettes among university students. There were 29/176 respondents who vaped. We can conclude that age is an important factor related to usage of e-cigarette. There was no association with university, gender and knowledge.

Keywords: E-cigarettes, awareness, university students

Learning Pattern of the Students of the Bachelor Programmes of UniKL RCMP, Malaysia

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Introduction: Medical and allied health education and training have grown and changed significantly in the past decades. Students are expected to understand, retain, and apply their knowledge and skills in a limited time during their training in the universities. Students usually join with different educational and scholastic backgrounds and bring with them a diverse range of learning experiences that affect their success in education. Consequently, the students invariably would have developed a preferred approach to acquire and process information.

Objective: The general objective of this study was to investigate and comprehend the learning pattern of the students of different bachelor programmes of UniKL RCMP.

Methods: The students from all the bachelor programmes of UniKL RCMP took part in this study. A questionnaire was prepared and validated before it was converted into the Google form. The questionnaire was circulated through the WhatsApp group, the responses were collected and preliminarily analysed by the Google. Ethical approval was taken from the ethical committee of FOM.

Results: A total of 227 students responded to the questionnaire, of them 75.7% were female, 54.4% were in 19-20 years of age and 95.6% were Malay. The highest percentage of respondents (65.9%) were from MBBS programme. A major portion of students were visual learner (78.8%) with a good number were mixed type. 96.5% uses lecture notes as the main resource and 78% take notes during the teaching session. 58% prefers to study alone but 84.5% used to discuss with friends for better understanding. Majority students (71.7%) were committed to their studies but 38% mentioned that external factors affect their studies. 51% agreed that they were self-disciplined but only 25.4% said they were happy with the current habit and commitment to their academic success.

Conclusion: This finding of this study will be helpful to teachers and mentors to guide the students in a more appropriate approaches towards their success. However, further studies will be required to validate the findings and to make them valuable.

Keywords: Learning patterns, Medical and allied health programmes, Malaysia

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Oral Hygiene Practices and Knowledge among Nursing Students: A Cross-Sectional Study at UniKL RCMP

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Introduction: Oral health is an essential component of overall health and well-being. Inadequate oral hygiene practices and knowledge can lead to significant health issues that impact quality of life. Among students, particularly nursing students, maintaining optimal oral health can be challenging.

Objective: To assess the level of oral hygiene knowledge and practices among students, identify associated factors, and propose recommendations for enhancement of oral care practices among nursing students.

Method: A cross-sectional study involving 77 nursing students was conducted using structured questionnaires to collect data on oral hygiene practices, awareness, and sources of information.

Result and discussion: The study revealed several key findings across three objectives. Firstly, in assessing the prevalence and patterns of oral hygiene practices. It was found that the majority of students are female (88.3%), have visited a dentist (96.1%), and exhibit varying ages at their first dental visit. In terms of oral hygiene at home, most students brush their teeth twice daily (41.6%), use manual toothbrushes (97.4%), and do not use dental floss regularly (61.1%). While the majority clean their tongue (88.3%), few utilize additional tools for oral hygiene (32.5%). A significant proportion are aware of professional oral hygiene (66.2%) and have undergone it (58.4%), with recommendations being received during orthodontic treatment by 28.6% of respondents. The majority received oral hygiene training from parents (31.2%) or dentists (32.5%), with 85.7% attending oral hygiene meetings and 97.4% expressing a desire for more oral health information. Secondly, gender differences were evident in awareness and utilization of professional oral hygiene services. Females exhibited higher awareness (62.3%) compared to males (3.9%). Additionally, more females reported undergoing professional oral hygiene treatments annually. Finally, no significant association between sources of oral hygiene training and the desire for more oral health information ($p > 0.05$ for all comparisons). Similarly, no significant association was observed between dentists recommending professional oral hygiene during orthodontic treatment and students' awareness of professional oral hygiene ($p = 0.067$). These findings suggest that factors other than the source of training may influence students' interest in seeking additional information about oral health.

Conclusion: In conclusion, this study explains oral hygiene practices and knowledge among nursing students at UniKL RCMP. The findings emphasize the importance of promoting good oral health habits among students for overall well-being. While most students demonstrate adequate oral hygiene practices, areas for improvement exist, notably in consistent dental floss use and utilization of additional oral hygiene tools. The lack of significant association between sources of oral hygiene training and the desire for more oral health information underscores the complexity of factors influencing students' attitudes. Increased awareness, training, and education programs are recommended to enhance oral hygiene practices and knowledge among nursing students for improved overall health outcomes.

Keywords: oral hygiene knowledge, oral hygiene practices, nursing students, dental education

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Identification of Rs8176719 for Blood Group O in Patients attending Family Medicine Clinic, Hospital Sultan Abdul Aziz Shah (HSAAS)

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Introduction: The genomic length of the ABO gene is 18 kb comprising seven exons. The test tube method is the most common method to determine an individual's blood group, which is prone to human error during interpretation. As the knowledge advances, so do the methods of determining the blood group.

Objective: The study aims to compare and evaluate the test tube and molecular techniques, Restriction Fragment Length Polymorphism-Polymerase Chain Reaction (RFLP-PCR), in determining the patient's blood groups.

Methods: RFLP-PCR is a method of amplifying the targeted genomic DNA and subjecting it to restriction enzyme digestion. Kpn I was used to recognize the cutting site containing SNP rs8176719. Then, gel electrophoresis was also done to confirm the restriction enzyme digestion pattern, and further sequencing was done to validate the SNP's presence.

Results: Out of 150 patients recruited at FMC, HSAAS, 38% were blood group O and 62% were non-O blood group. They were tested using the test tube method. The results for the molecular test show that Kpn I could differentiate and indicate the genotype of each tested sample, which was 96.49% of blood group O were wildtype and 3.51% were heterozygous mutant. The frequency of allele C in blood group O was 1.75% with OR of 0.00054 (95% CI).

Discussion: Single Nucleotide Polymorphism (SNP) is a variation at a single base position in a genomic sequence. Studies found that SNPs can be used to tag specific blood groups; for example, rs8176719 is being used to tag blood group O.

Conclusion: The results that were obtained from FMSC HSAAS agreed with research conducted at the National Blood Center of Malaysia, which stated the prevalence of blood group O and AB were 36.7% and 8.98% respectively. Kpn I can be used to differentiate the genotype of rs8176719, which tagged blood group O.

Keywords: ABO blood group; rs8176719; Restriction Fragment Length Polymorphism-Polymerase Chain Reaction; Single Nucleotide Polymorphism

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Expression of Selected Adhesion Molecules and Framingham Risk Score among Patients Attending Family Medicine Clinic, Hospital Sultan Abdul Aziz Shah (HSAAS)

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Introduction: The Framingham Risk Score (FRS) estimates 10-year cardiovascular risk using factors like age, gender, cholesterol and sugar levels, blood pressure, and smoking. VCAM-1 and E-selectin, cell adhesion molecules, are crucial in inflammation and atherosclerosis.

Objective: The study aims to associate the expression of VCAM-1 and E-selectin with the Framingham Risk Score (FRS) among patients attending medical follow-up.

Methods: Patients who fulfilled the study criteria were randomly selected and consented. Their demographic and clinical data were retrieved from the laboratory information system. Their blood was collected for VCAM-1 and E-selectin assay. Fifty patients were systematically selected from each FRS category.

Results: The results showed that the expression of E-selectin and VCAM-1 was significantly higher in the high FRS group than in the low FRS group, with p-values of .033 and .007, respectively (Kruskal Wallis test).

Discussion and conclusion: The expression level of adhesion molecules varies with the degree of vascular inflammation. The preliminary findings suggest recognition of the low-grade inflammation reflected by level adhesion in low FRS might be a potential biomarker for the prevention of the risk of atherosclerosis and CVD associated. However, further research is needed to fully understand the implications and potential applications of these findings in clinical practice.

Keywords: Framingham Risk Score, Vascular Cell Adhesion Molecule-1, E-selectin, Cardiovascular Risk.

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Coffee Consumption among UniKL RCMP Students shows no Cognitive Impairment but comes with certain side effects

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Introduction: Coffee is a popular beverage in Malaysia, especially among young adults. Coffee was reported to demonstrate a stimulating effect when consumed, mainly because of its caffeine content. Drinking coffee is widely believed to enhance one's concentration and performance, thus boosting the cognitive function of the drinker. If coffee is taken at a moderate dose, it can contribute to the feeling of being more energetic, but with excessive amounts, it may cause withdrawal symptoms in certain individuals. In some individuals, consuming coffee is associated with certain unpleasant symptoms such as headache, palpitations, frequent urination, and restlessness.

Objective: This study aims to evaluate the effects of coffee on young adults in UniKL-RCMP and study its side effects.

Methods: Two hundred and thirty-five students aged 19 to 26 years old were recruited as voluntary respondents. Respondent consents were taken, and the aim of the study was briefly explained. The respondents were required to answer a set of questionnaires and do a set of short quizzes for cognitive function test. The data gathered from the questionnaire and quiz were exported to Excel for organization and analysed by SPSS version 25.

Result: The results revealed that 57.4% of the students scored between 6 to 8 in the cognitive mental test which indicates no cognitive impairment, while 28.09% of the students scored 8 to 10 which indicated an enhanced state of cognitive activity. However, 43.6% of the students reported to experience headaches, 50.4% had frequent urination and 49.6% said they noticed palpitations after drinking coffee.

Conclusion: This study shows that drinking coffee among young adults does not affect their cognitive functions, but this habit can produce some specific unpleasant side effects. A larger sample should be considered for future re-assessment of this study in order to construct a more robust conclusion.

Keywords: coffee, side effects, cognitive function, young adults

PP-55

A Case of a Young Woman with Spinal Tuberculosis: Case Report

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Introduction: Skeletal involvement occurs in appromixately 10% of all patients with extrapulmonary TB. Spinal TB is the most common form of osteo-articular TB, accounting *for 1%–5% of all TB cases. Most common site of skeletal TB is the spine.*

Case description: A 19-year-old schoolgirl complained of back pain and lower limb weakness with stooping of the upper back. She had been diagnosed with pulmonary TB one year prior but had defaulted medication and follow-up few months earlier. She had mild back pain with a progressive stoop and weakness of the lower limbs but no numbness. She is currently using a wheelchair.

Discussion: Patient was put on anti-TB chemotherapy and continuous traction with a halo. She was also scheduled for surgery to correct sagittal imbalance, to re-create thoracic kyphosis and lumbar lordosis and to relieve chronic back pain and arrest progressive deformity. The surgery was conducted through posterior approach, along with surgery decompression of the spinal canal and posterior implants.

Conclusion: In management of spinal tuberculosis, anti-TB chemotherapy is given for 3 weeks before surgery so that tissues are organized during healing. Surgery is indicated to correct spinal deformity with the aim to stabilize the spine and recreate the normal anatomical balance, thus correcting the spinal in-balance. Surgical decompression is done to relieve the neurologic compression while implants are needed for stabilization.

Keywords: Spinal Tuberculosis, Surgery decompression, Posterior implants

Effects of Proprioceptive Neuromuscular Facilitation (PNF) Stretching on Heart Rate, Blood Pressure & QT Interval Among Young Adults.

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Introduction: Proprioceptive neuromuscular facilitation (PNF) is the preferred method of treatment to improve patient's well-being by several physiotherapists in Malaysia. It is a stretching technique practiced improving muscle elasticity, increasing muscle thickness, improve dynamic balance and to produce positive effects on active and passive range of motions.

Objective: The objective of this study is to investigate the immediate effects of PNF stretching exercises on heart rate, blood pressure & electrical conduction of the heart among young adults.

Method: Young adults (50 participants) were selected to undergo the hold-relax PNF stretching exercise for upper limbs (biceps muscle) and lower limbs (hamstring muscle). All the participants were assigned four sets of a combination of passive movement, isometric contraction, and passive stretching for both upper and lower limbs. Preliminary data (before exercise) and post-data (after exercise) for heart rate and blood pressure were measured and recorded. The data were statistically evaluated by Paired-sample T test and Non-parametric Sign test at ($p<0.05$) level of confidence (using SPSS 23.0).

Result: A paired samples t-test was performed to compare lower limb pre-testing (SBP_LL_pre-test) and post-testing (SBP_LL_post-test). The results showed that there was a significant difference in the scores for SBP_LL_pre-test (M=114.98, SD=8.714) and SBP_LL_post-test (M=118.86, SD=9.94); t (49) =-2.28, p=0.027.

Conclusion: There are no significant changes for heart rate, diastolic blood pressure, pre-interval lower limb and QT interval post-PNF stretching exercise. Significant changes are found in systolic blood pressure for the upper limb post-PNF stretching exercise. The PNF stretching exercises are safe in clinical practice.

Keywords: Proprioceptive Neuromuscular Facilitation (PNF), Heart Rate, Blood Pressure, QT Interval.

PP-57

Exploring Influential Factors on Static Balance among Undergraduate Students

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Introduction: Static balance pertains to the capacity to sustain stability in posture and uphold the alignment of one's center of gravity concerning a stationary and unmoving foundation of support. Among young adults, possessing adequate static balance stands as a pivotal element augmenting motor skills across a spectrum of daily physical pursuits, encompassing both sporting engagements and routine exercises.

Objective: To examine the correlations between various factors and static balance among undergraduates at the Faculty of Medicine, Universitas Sumatera Utara, including gender, age, weight, height, body mass index (BMI), waist and hip measurements, waist-hip ratio, support base area, and strength of lower limb muscles.

Methods: This study adopts an analytic observational approach using a cross-sectional design. The participants selected for this research are preclinical students enrolled in the undergraduate program at the Faculty of Medicine, Universitas Sumatera Utara, recruited through consecutive sampling. Information regarding gender and age was collected using a questionnaire, while other variables were obtained through direct measurements. The assessment of static balance was conducted utilizing the BESS (Balance Error Scoring System) test.

Results and Discussion: The evaluation of static balance revealed that the highest number of errors occurred during the single-leg stance on a foam surface subtest (with a median score of 7 out of a maximum of 10). The average total BESS score was calculated as 13.57, with the highest observed score reaching 27. Upon conducting a bivariate analysis, notable correlations were found between age, weight, body mass index (BMI), and hip circumference with static balance. However, the analysis indicated that gender, height, waist-hip ratio, support base area, and lower extremity muscle strength did not exhibit statistically significant correlations with static balance.

Conclusion: Static balance demonstrated significant correlations with age, weight, body mass index (BMI), and hip circumference.

Keywords: Anthropometry, Balance Error Scoring System (BESS), Postural stability, Static Balance, Students

Is there any Endocrinal Association to Autism Spectrum Disorder?

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Introduction: Autism spectrum disorder (ASD) has been one of the trending topics in the research world for some decades due to its unknown pathogenesis, with various questions pertaining to genetics, pregnancy and even to the endocrinal profiles of the ASD patients.

Objectives: The objective of this study was to investigate if there is a significant difference in the salivary biomarker levels of serotonin and cortisol between children with SD and age-matched control group. The study also aims at investigating if there is a correlation between these two biomarker levels with one another.

Methods: Saliva samples collected via spitting or suction method, from 60 autistic and 30 neurotypical children, from around Selangor, within the age group 3-11 years of both male and female, were subjected to ELISA to find the salivary concentration of both biomarkers in ng/mL.

Results and Discussion: The results revealed neither any significant difference in the salivary levels of serotonin between the ASD young patients and control group nor any significant correlation between the two biomarker levels. However, elevated levels of salivary cortisol were found in the control group comparatively, which was assumed to be due to the circadian rhythm.

Conclusion: Aberrant levels of salivary biomarkers serotonin and cortisol in autistic children is one of the most consistent results of autism-based researches yet, neither have been confirmed as specific for autism. Endocrinal investigations as carried out in this study might best be done based on blood samples, but ethical constraints related to invasive methods on young children posed as limitations for a clearer conclusion.

Keywords: Autism Spectrum Disorder, Serotonin, Cortisol

EP-01

Lumbar Lordosis in Malaysian Population – an Observational Study

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Introduction: Assessment of Lumbar Lordosis angle (LLA) is an important prerequisite to determine the health of the spine. Deviation from the typical spinal curvature is known to negatively impact posture and cause low back pain (LBP). According to NHMS and MOH Malaysia, 12–60% incidence of low back pain is reported in Malaysia, near the global average of 10–63%. Hence, understanding the variables influencing Lumbar Lordosis can aid in creating effective screening and rehabilitation measures.

Objectives: This study aimed to examine the LLA of adult Malaysians and analyze its association with age, gender, waist to hip ratio (WHR) and LBP.

Methods: Following ethical approval from NMRR, lateral view digital X-rays of 86 Malaysian adults were studied. The mean LLA was measured using Cobb's method and its variations according to age, gender, BMI, waist to hip ratio (WHR), and LBP were analysed.

Results and Discussion: Significantly higher mean LLA was observed in females and in subjects with increased WHR. However, variations in LLA with respect to age, BMI and LBP were statistically insignificant.

WHR is a classic marker for abdominal obesity. Increased abdominal obesity increases the weakness of trunk muscles causing a hyper lordotic lumbar spine. This causes an abnormal posture leading to Low Back Pain (LBP). The central fat deposition combined with the anatomical variation in females naturally increases the lumbar curvature and LLA thereby increasing the risk of LBP in them.

Conclusion: Weakness in the muscles of the lumbar-pelvic belt adversely affects LLA and pelvic inclination thereby increasing the risk of LBP. Mean LLA with reference to WHR observed in this study will serve as a baseline reference value for Malaysian population. It can also be useful to physiotherapists and orthopedicians for a general assessment of lumbar spine and to plan rehabilitation strategies.

Keywords: Lumbar lordosis, BMI, WHR, LBP

Mangiferin Improves 3-Nitropropionic Acid Induced Huntingtin Disease-like Memory Impairment and Motor Incoordination in Rats

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Introduction: Huntington's disease (HD) is an autosomal dominant, inherited neurological disorder associated with a pathogenic expansion of cytosine-adenine-guanine (CAG) trinucleotide repeats in exon 1 of the huntingtin gene (Htt). The onset of HD occurs between 30 and 50 years followed by a gradual occurrence of psychiatric disturbances, cognitive and motor dysfunction. The daily performances and life quality of HD patients have been severely interfered by these clinical signs and symptoms until the last stage of neuronal cell death. To the best of our knowledge, no treatment is available to completely mitigate the progression of HD. Mangiferin, a naturally occurring potent glucoxilxanthone, is mainly isolated from the *Mangifera indica* (Mango) plant. Considerable studies have confirmed the medicinal benefits of mangiferin against memory and cognitive impairment in neurodegenerative experimental models such as Alzheimer's and Parkinson's diseases.

Objective: Therefore, this study aims to evaluate the neuroprotective effect of mangiferin against 3-nitropropionic acid (3-NP) induced HD-like memory, cognitive impairments and motor incoordination in rat models.

Methods: Adult Wistar rats (n = 32) were randomly allocated equally into four groups: normal control, disease control and two treatment groups. Treatment with mangiferin (10 and 20 mg/kg, p.o.) was given for 14 days, whereas 3-NP (15 mg/kg, i.p.) was given for 7 days to induce HD-like symptoms in rats. Rats were assessed for their cognitive and motor functions using open field test (OFT), novel object recognition (NOR) and rotarod tests.

Results: 3-NP triggered anxiety, decreased recognition memory, reduced locomotor activity and declined rotarod performance were alleviated by mangiferin treatment.

Conclusions: The findings from the present investigation provide a new possibility of mangiferin as an alternate neuroprotective agent in treating HD.

Keywords: 3-nitropropionic acid, Huntington's disease, mangiferin, natural product, neuroprotective

EP-03

Case Report: Primary Breast Diffuse Large B-Cell Lymphoma

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Introduction: Primary breast lymphoma (PBL) is a non-Hodgkin lymphoma (NHL) neoplasm that occurs very rarely in the breast, less than 1-2% of all NHL and less than 0.5% of all malignant neoplasms of the breast. PBL is defined as lymphoma confined to one or both breasts and/or regional lymph nodes, without a previous history of lymphoma. B-cell type breast lymphoma is more common than T-cell. About half of PBL are DLBCL.

Case Description: A woman, MS, 41 years old with complaints of a lump in her right breast came for treatment to Medan City Hospital and underwent a mastectomy on her right breast. Then tissue was examined at the Anatomic Pathology Laboratory. Macroscopic examination, on cutting lamellar a tumor mass appears grayish white and brownish red, rubbery consistency that has circumscribed non-capsulated. Microscopic examination shows a tumor mass dominated by a diffuse distribution of relatively monotonous, medium-large sized atypical and pleomorphic cells (3-5 times size of mature lymphocyte cells) that resemble centroblast and immunoblast cells. Nuclei are round, ovoid, angulated, N/C ratio is increased, chromatin is rough with prominent nuclei, some are densely basophilic, cytoplasm eosinophilic. High atypical mitotic rate. Immunohistochemical examination negative for ER, PR, Her2 and CD3, positive for CD45 and CD20, high proliferation index Ki67 (>30%).

Discussion and Conclusion: Based on microscopic and immunohistochemical examination, this case was concluded to be a primary breast diffuse large B cell lymphoma (DLBCL), stage pT3N1Mx, ICD-O code: 9680/3.

Keywords: Breast, DLBCL, CD20 positive.

A Study on the Chemo Preventive and Anticancer Potential of Dihydroxy Gymnemic Triacetate isolated from *Gymnema Sylvestre* with respect to Prostate Cancer

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Background: Prostate cancer is one of commonly diagnosed malignancies among men. Drugs from plant sources have gained much interest in treating this cancer due to their multi-functional, therapeutic properties and overall safety.

Aim: Dihydroxy Gymnemic Triacetate (DGT) is a novel triterpenoid saponin isolated from *Gymnema sylvestre* proved for its antidiabetic activity was focused in the present study on analyzing its anticancer activity.

Objective: To evaluate the antagonist effect and drug like properties of DGT, against Bcl-2 and Bcl-XL protein through molecular docking and molecular dynamic studies. To evaluate the cytotoxic potential and mode of action of DGT on PC-3 cells through cell proliferation assay, flow cytometry along with protein expression studies of Bcl-2, Bcl-XL, Mcl-1, Bad, Bax, Caspase 9 and Caspase 3. To assess chemopreventive effect of DGT in N-Methyl-N-nitrosourea (MNU) + Testosterone (T)-induced Sprague-Dawley male rats.

Results & Discussion: DGT effectively bound with Bcl-2 and Bcl-XL with good docking score and a stable docked complex throughout simulation period. DGT reduced the survival of PC-3 cells and showed accumulation of cells in the G2/M phase of the cell cycle. DGT was more potent in binding with anti-apopotic proteins, also satisfying Lipinski's rule of five and ADME properties.

Conclusion: DGT significantly acts on prostate cancer cells by activating apoptosis and did not exhibit any toxicity to the animal model. Hence, DGT could be considered for the preparation of chemopreventive agent and potent drug against prostate cancer.

Keywords: DGT, *G. sylvestre,* ADME, PC-3 cells.

EP-05

Case Report: Clear Cell Odontogenic Carcinoma

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Introduction: Malignant odontogenic tumors account for 6% of the total number of odontogenic tumors. Clear cell odontogenic carcinoma (COdC) is an uncommon tumor originating from the odontogenic cells. Initially documented in 1985, but formally acknowledged as a cancerous growth in 2005. The majority of instances are observed in females between the ages of 40 and 59. The mandible is more prevalent in the maxilla.

Case description: A 38-year-old man with complaint of painless swelling in the right cheek area persisting for the last 6 months. A panoramic radiograph and computed tomography (CT) scan of the head were conducted. Upon macroscopic inspection, two tissue samples from the mandible were received. The color was grayish white with an uneven surface and a rubbery substance. The tissue taken from the jaw showed an abundance of tumor cells that formed clusters within hyalinized stroma. The tumor cells exhibit a polygonal morphology, with enlarged nuclei that are round to oval in form. The nuclei are hyperchromatic, with some of the chromatin displaying a coarse texture. The nucleoli are prominently visible, and the cytoplasm appears clear. There is no evidence of lymphovascular and perineural invasion in this particular patient.

Discussion and conclusions: The patient was diagnosed as clear cell odontogenic carcinoma based on the findings from clinical, radiographic, and microscopic investigations. The tumor was determined to have no lymphovascular invasion or perineural invasion, and it was classified according to the International Classification of Diseases for Oncology (ICD-O) as 9341/3.

Keywords: Odontogenic carcinoma, clear cell, mandible.

Salinomycin as an apoptosis regulator of osteosarcoma cell line U2OS through the intrinsic pathway by regulating the expression of Bax and Bcl2

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Introduction: Osteosarcoma poses a serious therapeutic challenge, mainly due to heterogeneous nature of the cells, which is aggressive and progressive. Doxorubicin has shown efficacy as a therapeutic agent in osteosarcoma, but there has been no significant improvement in the prognosis of osteosarcoma in four decades. Several drugs have been studied for their anti-cancer effects. Salinomycin is believed to have anti-cancer effects against a variety of malignancies.

Material and Methods: In this study, the expression of Bax and Bcl2 was examined using the RT-PCR method on the osteosarcoma cell line culture U2OS, which had previously been carried out for cytotoxic tests using the MTT assay method to determine the concentration dose of salinomycin and doxorubicin. Bax and Bcl2 gene expression were calculated using the Livak method. The statistical significance level for analyses carried out as part of this study was $p<0.05$.

Result: This study reported that Bax expression at a salinomycin concentration of 0.005 µM was 1.85-fold higher compared to control cells, while at the same concentration, Bcl2 expression was found to be 0.61-fold lower when compared to control cells.

Conclusion: This underscores the potential of salinomycin as a standalone anti-apoptotic pathway modulator in the management of osteosarcoma. Consequently, this investigation not only contributes to our comprehension of these therapeutic agents but also situates their collective impact on apoptosis regulators, providing valuable insights for the refinement of osteosarcoma treatment paradigms

Keywords: U2OS, Salinomycin, Doxorubicin, Bax, Bcl2

EP-07

Immunomodulatory Effect of *Aloe Vera* Gel on Pro-Inflammatory Gene Expression in Sprague Dawley Rats

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Introduction: *Aloe vera* (*Aloe barbadensis)* is known for its anti-microbial, and immunomodulatory activities. Though the immunomodulatory activity of *Aloe vera* through oral route is reported, studies on the intramuscular route of administration are limited. The aim of the study was to assess the ability of freeze-dried *Aloe vera* (FDAV) gel to prime immune response towards Th1 phenotype when administered intramuscularly.

Methods: Thirty-two female Sprague Dawley rats were divided into four groups (n=8). Group 1 was administered with 100µl PBS, Group 2 with 100µl of 1% (w/v) FDAV gel solution in PBS, Group 3 with 100µl of a solution made up of 5mg of bovine serum albumin (BSA) dissolved in 100ml of PBS and group 4 with 100µl of a solution made up of 5mg of BSA dissolved in 100ml of 1% (w/v) FDAV gel. The serum level of aspartate transaminase (AST), alanine transaminase (ALT) and creatine kinase (CK), and serum nitric oxide (NO) were determined. Total and differential white blood cell (WBC) count, and gene expression studies on inducible nitric oxide synthase (iNOS), IL-12 and IFN-γ were employed to assess the gel's ability to promote immune response.

Results: The results showed significant difference in the level of serum NO, and expression of pro-inflammatory genes in group 4 compared to others ($p<0.05$). No significant difference was observed among the groups for serum enzyme assay, total WBC, and differential WBC count.

Conclusion: Crude *Aloe vera* gel possesses the Th1 immune response priming potential which is evident through the upregulation of pro-inflammatory genes.

Keywords: *Aloe vera*, immunomodulation, pro-inflammatory genes

Factors Associated with Community Behavior in Littering in the Tourist Area Of Kelurahan Tiga Raja, Girsang Simpang Bolon Sub-District, Parapat Simalungun District, Indonesia

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Introduction: Waste is a material that is wasted or discarded from the source of human activity that has no economic value which affects aesthetic and health values. \

Objective: The purpose of this study was to determine the factors associated with community behavior in littering in the Tourism Area of Tiga Raja Village, Girsang Simpang Bolon District, Parapat Simalungun Regency

Methods: The study was conducted using quantitative research methods with a Cross Sectional approach. The sample size was 65 respondents.

Results and Discussion: The results of research from data collected through questionnaires with the Chi Square test showed that there was no relationship between gender and littering behavior (p value = 0.1 > 0.05), no relationship between age and littering behavior (p value = 0.658 > 0.05), no relationship between occupation and littering behavior (p value = 0,901 > 0.05), there is a relationship between knowledge and waste disposal behavior (p value = 0.014 < 0.05), there is a relationship between attitude and waste disposal behavior (p value = 0.029 < 0.05), there is a relationship between reinforcing factors (facilities and infrastructure) with waste disposal behavior (p value = 0.003 < 0.05).

Conclusion: The conclusion is that knowledge, attitudes, facilities and infrastructure are factors associated with community behavior in littering in the tourist area of Tiga Raja village, Girsang Simpang Bolon District, Parapat Simalungun Regency. Suggestions for activities to improve knowledge, attitudes of the local community by conducting counseling or making posters to dispose of garbage in its place, the government provides facilities and infrastructure so that garbage is disposed of in its place.

Keywords: Garbage, behavior, disposal

EP-09

Antioxidant Activity Test of Meniran (*Phyllanthus Nuri Linn.*) and Red Ginger (*Zingiber Officinale Rosc.Var Rubrum*) Tea Combination using DPPH Method

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Introduction: Antioxidants are substances that can counteract or prevent oxidation reactions. Herbal tea is basically a mixture of herbs made from the leaves, seeds, or roots of various plants. one of the innovative ingredients is a combination of Meniran (*Phyllanthus niruri Linn*.) and red ginger (*Zingiber officinale rosc.var Rubrum*) plants that contain various active components. Among them, flavonoids that act as antioxidants.

Objective: The purpose of this study was to determine the antioxidant activity of the combination of meniran and red ginger tea. Methods: Combination tea was made by mixing meniran and red ginger with formulas of 25%, 50% and 75% antioxidant. Data was analyzed by ANOVA statistical test. Antioxidant analysis was conducted using spectrophotometric method.

Result: The antioxidant test results showed that the highest antioxidant activity was found in treatment F3 which was 2,585 ppm with consecutive F2 7,485 ppm and F1 9,993 ppm and ascorbic acid as a comparison showed IC50 value of 5,158 mg/L**.**

Conclusion: The meniran (*Phyllanthus niruri Linn*.) and red ginger (*Zingiber officinale rosc.var Rubrum*) tea combination showed potential antioxidant activity.

Keywords: Antioxidant, Meniran, Red Ginger, DPPH, IC50

The Potential of Purple Cabbage (*Brassica oleracea* L. var. *capitata f. rubra*) Chemical Constituents as Antihypertensive: *In Silico* and ADMET Approach

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Introduction: Purple cabbage contains the compounds α-carotene, β-carotene, α-tocopherol, γ-tocopherol, and ascorbic acid. Apart from that, there are very high levels of vitamins A and C, anthocyanin, quercetin, kaempferol, and lutein. It has been reported to have antioxidant, anti-inflammatory, and antihypertensive activities. However, purple cabbage has not been studied as an antihypertensive that inhibits the eNOS enzyme, which triggers high blood pressure.

Objective: This study aims to determine the effectiveness of compounds from purple cabbage as antihypertensives and pharmacokinetic predictions.

Methods: Prediction of constituents' interactions from purple cabbage with eNOS enzyme using AutoDock Tools 1.5.6. Then, the potency of constituents based on molecular docking was tested for pharmacokinetic properties with the pkCSM ADMET descriptors algorithm protocol.

Results and Discussion: *In silico* molecular docking, results show that β-carotene, lutein, and α-carotene (carotenoid group), as well as cyanidin-3-diglucoside-5-glucoside (anthocyanin group), have very high binding affinities with ΔG (kcal/mol) and Ki values (nM), -9.91; 54.21, -8.40; 695.27, -7.94; 1510, and -7.85; 1770, respectively compared to captopril (-4.02; 1130000) as a drug. This is because the purple color caused by this group of compounds is helpful for therapeutic effects, such as degenerative diseases. Apart from that, a group of vitamins (vitamin A, α- and γ-tocopherol) as well as polyphenols (kaemferol) and flavonoids (quercetin). ADMET predictions show that only α-carotene and vitamin A meet the predictions of absorption (Caco2, 1.262 and 1.516 × 10-6 cm/s and intestinal absorption, 92.061 and 92.218%), distribution (BBB permeability, 0.945; 0.644), metabolism (cytochrome P450), excretion (total clearance, 1,531 log mL/min/kg vitamin A only), and toxicity (vitamin A that is not toxic in AMES test).

Conclusion: The carotenoid and vitamin group from purple cabbage have the potential to be antihypertensive.

Keyword: Purple Cabbage, eNOS, *in silico*

EP-11

Evaluation of Antidiabetic Activity of Novel Triterpenoids Isolated from Ethyl Acetate Extract of *Cassia Fistula* Stem Bark through *in Vivo* and *in Silico* Analysis

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Introduction: In recent years, plant-based drugs are very effective in the treatment of diabetes mellitus due to low cost and negligible side effects.

Objective: Here, we identified the mechanisms of action of antidiabetic activity of novel compounds isolated from *Cassia fistula* stem bark in STZ-diabetic animals.

Methods: Novel triterpenoid compounds (C1, C2 and C3) were treated to STZ-administered diabetic animals at a concentration of 20mg/kg body weight orally for 60 days to assess their effects on plasma glucose, plasma insulin/ C-peptide, serum lipid markers and the enzymes of carbohydrate metabolism, glucose oxidation, HbA_1c glycemic indicator, hepatic marker enzymes, renal function and insulin signaling molecules.

Results & Discussion: Oral administration of novel triterpenoid compounds to STZ-diabetic animals significantly decreased *($p<0.05$)* the plasma glucose concentration on the 7^{th}, 15^{th}, 30^{th}, 45^{th} and 60^{th} days in a duration-dependent manner (*$p<0.05$*). Plasma insulin (*$p<0.0001$*)/C-peptide (*$p<0.0006$*), tissue glycogen (*$p<0.0034$*), glycogen phosphorylase(*$p<0.005$*), glucose 6-phosphatase (*$p<0.0001$*) and lipid markers were significantly increased (*$p<0.0001$*) in diabetic rats, whereas glucokinase (*$p<0.0047$*), glycogen synthase (*$p<0.003$*), glucose oxidation (*$p<0.001$*), GLUT4 mRNA (*$p<0.0463$*), GLUT4 protein (*$p<0.0475$*) and the insulin-signaling molecules IR mRNA (*$p<0.0195$*), IR protein (*$p<0.0001$*), IRS-1 mRNA (*$p<0.0478$*), p-IRS-1^{Tyr612} (*$p<0.0185$*), Akt mRNA (*$p<0.0394$*), p–Akt^{Ser473}(*$p<0.0162$*), GLUT4 mRNA (*$p<0.0463$*) and GLUT4(*$p<0.0475$*) were decreased in the gastrocnemius muscle. Oral administration of novel triterpenoids has also restored the HbA_1c levels, altered levels of enzymes involved in liver function and kidney function to near normal. The antidiabetic targets in the insulin signaling pathway were docked with triterpenoids using SeeSAR software. C1–C3 possessed promising antidiabetic activity by regulating insulin signaling mechanisms and carbohydrate metabolic enzymes. *In silico* analysis of C1–C3 with IRK and PPAR-γ protein coincided with *in vivo* findings.

Conclusion: Thus, these investigations indicated therapeutic efficacies of novel triterpenoids against diabetes.

Keywords: *C. fistula,* triterpenoid, Plasma insulin, C-peptide, GLUT4, insulin signaling.

Antioxidant and Antidiabetic Activities of Honey Produced by Different Stingless Bee Species in Perak, Malaysia

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Introduction: Stingless bee honey (SBH), produced by the kelulut bee of Trigona or Meliponine species, is a natural product-derived food that has been extensively utilized for therapeutic purposes since ancient times.

Objective: This study aims to compare the antioxidant and antidiabetic activities of honey from three species of Malaysian stingless bee, namely *Heterotrigona itama*, *Geniotrigona thoracica*, and *Lophotrigona canifrons* in Perak.

Methods: The methods used were total phenolic content (TPC), total flavonoid content (TFC), 1,1-diphenyl-2-picrylhydrazyl (DPPH), ABTS, phosphomolybdenum, Ferric reducing antioxidant power (FRAP), and α-amylase inhibition assays.

Result: From this study, SBH from *H. itama* exhibited significantly the highest TPC value (46.020±12.559 mg GAE/100 g SBH) and TFC value (44.494±0.932 mg QE/100 g SBH). In the antioxidant activity measurement, SBH produced by *H. itama* showed significantly the lowest IC50 values of 7.429±0.078 mg/ml in the DPPH assay, significantly higher ABTS scavenging activities (26.801±2.526 mg TEAC/100 g SBH), FRAP (153.973±18.388 mg FeSO4 equivalent/100 g SBH), and phosphomolybdenum (242.203.733±4.095 mg AAE/100 g SBH) compared to SBH produced by *G. thoracica* and *L. canifrons*. Meanwhile, SBH from *H. itama* showed significantly the lowest IC50 value (13.773±3.163 mg/ml) in the α-amylase assay than *G. thoracica* and *L. canifrons*. A strong correlation between TPC, TFC, DPPH, ABTS, FRAP, phosphomolybdenum, and α-amylase activity was also detected in all SBH samples.

Discussion: The variability observed in the total phenolic and flavonoid contents within SBH can be attributed to several factors, including the bee species, botanical origins, and geographical locations. Moreover, the intricate composition of honey, along with the interactions among its numerous antioxidant compounds, and the possible synergistic relationships among them, may significantly contribute to its antioxidant activities.

Conclusion: The study suggests that the high phytochemical composition and antioxidant activities in SBH from *H. itama* may account for its antidiabetic potential.

Keywords: Stingless bee honey, TPC, TFC, DPPH, ABTS, Phosphomolydenum, FRAP and α- amylase.

EP-13

Insulin-like Growth Factor-1 (IGF-1) Levels and Height in Childhood Nephrotic Syndrome: A Case Control Study

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Introduction: Growth retardation is often seen in childhood nephrotic syndrome (NS). The underlying mechanisms responsible for this condition remains unclear. Nephrotic condition causing loss of insulin-like growth factors (IGFs) and corticosteroid therapy suggesting potential development of IGF-1 resistance, one of the main factors contributing to growth failure.

Objective: To determine difference of IGF-1 levels and height between childhood NS and healthy child, along with correlation of IGF-1 levels with height.

Methods: This was a case control study (February-December 2023). Inclusion criteria included age 5-18 years, meeting the diagnostic criteria of NS as cases, and age-matched of healthy children as controls. IGF-1 levels examination using immunochemiluminescent method and height measurement using stadiometer. Continuous data with normally distribution were expressed as mean and standard deviation, non-parametric distribution as median and minimum-maximum, and categorical data as proportions. Differences between the groups analyzed using Independent T test, and correlation between IGF-1 levels and body height used the Pearson correlation.

Results and Discussion: From a total of 85 children who included in this study 35 children were NS and 50 children were healthy. Short stature in NS children was 10 (28.6%) with height 142.5 ± 17.28 cm, and in healthy children was 9 (18.0%) with height 145.3 ± 16.74 cm. IGF-1 levels in NS children was 194.3 ± 76.8 ng/mL, and in healthy children was 194.7 ± 86.49 ng/mL. There was no significant difference between group in IGF-1 levels ($p = 0.982$), nevertheless in height ($p = 0.470$). There was no significant correlation between IGF-1 levels and height in NS children ($p = 0.177$), however in healthy children was significant ($p < 0.001$).

Conclusion: There is no significant difference of IGF-1 levels and height between the groups, and correlation of IGF-1 levels and height in healthy children is significant.

Keywords Childhood; Height; IGF-1 level; Nephrotic syndrome

Smart Materials in Conservative Dentistry and Endodontics

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The most promising technologies today for lifetime efficiency and improved reliability include the use of smart materials and structures. By definition and general agreement, materials that have properties which can be altered in a controlled manner by stimuli, such as stress, temperature, moisture, pH, and electric or magnetic fields. A key feature of smart behaviour includes the ability to return to its original state after the stimulus has been removed and their excellent biocompatibility. These properties have beneficial applications in various fields including dentistry. Smart composites with amorphous calcium phosphate are one of many smart materials used in dentistry, it aids in stimulating repair of defective teeth. Bioactive glasses (another smart material) are silicate-based substances that form a strong chemical bond with the tissues. These biomaterials are highly biocompatible and form a hydroxyapatite layer when implanted in the body or soaked in the simulated body fluid. The C Point system is a smart seal obturation system that consists of premade, hydrophilic endodontic points and an accompanying sealer called smart paste bio. The deformable endodontic point (C Point) is available in different tip sizes and tapers and is designed to expand laterally while not expanding axially by absorbing residual water from the instrumented canal space. Smart prep burs are polymer burs that removes only infected dentin and leaves behind healthy dentin. Smart Memory alloys are NiTi alloys which can change shape when under stress and can return back to its original shape once the stress is removed. Fluoride releasing pit and fissure sealants helps in preventing caries formation by releasing fluoride for a sustained period of time. These innovations in the material sciences have marked the beginning of an era of Bio-Smart Dentistry, a step into the future!

Keywords: smart materials; smart behaviours; biocompatible

EP-15

Histological Analysis of Nasal Polyps in Wistar Rat Models

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Introduction: Chronic rhinosinusitis is a chronic inflammation of the sinonasal mucosa and contributes to massive alterations in the formation of nasal polyps and pathophysiological changes such as epithelial thickening.

Methods: This study employs a true experimental design with a post test Only Control Group. Rattus norvegicus (wistar rats) are used to model chronic rhinosinusitis with nasal polyps. The samples are divided into negative control, positive control, and treatment groups, with treatment assignment determined through a simple random method.

Results and Discussion: The histological findings of this study are divided by experiment day. The first, on the 14th day of the experiment, showed pieces of tissue covered by single to layered, goblet, ciliated columnar epithelial cells. Day 21 shows tissue sections with single to layered, goblet, and ciliated columnar epithelial cells. The significant change was undoubtedly found in sample day 28, which showed that the tissue is lined with single to layered, ciliated, columnar epithelial cells. On day 35, it was found that tissue covered starts from single-layered column epithelial cells to multilayer column epithelial cells. Lastly, from sample day 42, the tissue sections were lined with single to layered, ciliated, columnar epithelial cells, with visible thickening of the basement membrane.

Conclusion: Using animal models to determine the cause and development process of sinusitis is a great choice because this method can analyze the pathophysiologic processes of the CRS. This experiment confirms that the histological appearance in the wistar rat is similar to humans, such as the early inflammatory response found in chronic rhinosinusitis.

Keywords: Nasal Polyp, Wistar Rat, Chronic Rhinosinusitis, Histological Finding

Application of the Simplex Lattice Design Method in Optimizing the Formula of Kopasanda Leaf Extract Chewable Tablets

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Introduction: Kopasanda plant (*Chromolaena odorata* L.) is a plant that lives in tropical and sub-tropical areas. The flavonoid content in kopasanda plants functions as an antioxidant, counteracts free radicals and as antihypercholesterolemia.

Objective: This study aimed to determine the effect of the combination of excipients on the physical properties of tablets and obtain the optimum formula of the combination of mannitol and lactose in chewable tablets.

Methods: The method of this research is experimental, including material collection, preparation (F1 = 50%:50%, F2 = 0%:100%, F3 = 75%:25%, F4 = 100%:0%, F5 = 25%:75%), granule quality evaluation and tablet physical properties evaluation. To meet these criteria, materials were combined and analyzed using the simplex lattice design method.

Results: Based on the results of the study, it shows that the evaluation of granule physical properties (flow time, angle of repose, and settling) of the five formulas has met the requirements. In terms of physical quality evaluation of tablets including weight uniformity test, size uniformity, hardness, friability, disintegration time, hedonic and taste responses showed that the five formulas produced tablets with good physical quality and met the requirements.

Conclusion: The test results of flow time, hardness, disintegration time and taste responses have a significant effect on all formulas. The optimum formula for chewable tablets with the proportion of mannitol (0%) and lactose (100%) obtained a desirability value of 0.838.

Keywords: Chromolaena odorata L, chewable tablets, mannitol, lactose, simplex lattice design

EP-17

Potential of Butterfly Pea Flower (*Clitoria Ternatea*) Extract Shampoo as Anti *Malassezia* Sp

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Introduction: Dandruff is a scalp symptom characterized by the presence of flakes on the skin and scalp hair, accompanied by dryness and itching. It can affect anyone and have an impact aesthetically potentially affecting the quality of life in socio-economically or psychologically. Until now, many studies have been conducted to understand the pathogenesis of dandruff, especially the effect of treatment on the elimination of *Malassezia restricta* and *Malassezia globose*, that play the most important role in the pathogenesis of dandruff. The increasing antimicrobial resistance exhibited by infectious microorganisms in dandruff has led to extensive research. This research focuses on the therapeutic potential of anti-dandruff herbs.

Objective: To investigate the potential of butterfly pea flower extract (*Clitoria ternatea*) shampoo as anti-Malassezia sp.

Methods: A quasi-experimental study, 70 dandruff scalp patients were treated with *Clitorea ternatea* shampoo 20 %. Real-Time PCR method used to evaluate Malassezia sp DNA expression before and 4 weeks after use shampoo.

Result: Mean *Malassezia sp* DNA expression before using shampoo *Clitoria ternatea* was 21.54 ct and Mean *Malassezia sp* DNA expression after using shampoo for 4 weeks (3 times a week) was 23.36 ct. The difference was statistically significant p=0.003 (t-dependent test).

Discussion: *Clitoria ternatea* is known to contain various phytochemical compounds with anti-fungal, anti-inflammatory and potent antioxidant properties. These properties allow this plant to be used as a treatment for dandruff. The most common secondary metabolites found in butterfly pea flowers are flavonoid compounds. Kaempferol, Clitorin, Delphinin 3-0-ß-glycoside (anthocyanin), Myricetin 3-glycoside, Quercetin 3-glocoside, Kaempferol 3-glocoside are a class of flavonoids which have anti-fungal effects.

Conclusion: *Clitoria ternatea* extract shampoo has anti Malassezia properties, as proven by the decrease in *Malassezia* DNA expression on the scalp of dandruff patient after use 4 weeks *Clitoria ternatea* extract shampoo.

Keywords: *Malassezia sp*., anti-fungal, butterfly pea flower, RT PCR

Effects of Polypharmacy and Pims (Potentially Inappropriate Medications) on Charlson Comorbidity Index and Katz Index in Elderly Patients: A Prospective Study on Hospital in Serang

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Introduction: The elderly tend to experience degenerative diseases and generally have more than one disease caused by age, resulting in them taking several drugs. Inappropriate Medications in geriatric patients were a serious health problem associated with increased morbidity, mortality, and health costs.

Objective: This study investigated the effects of polypharmacy and Potentially Inappropriate Medications on the Charlson Comorbidity Index and Katz Activity of Daily Living in elderly patients during January and February 2023.

Method: This was a prospective study that included 100 geriatric inpatients who were ≥ 60 years old. Comorbidity was determined using the Charlson Comorbidity Index, and dependency on daily living was assessed with Katz Activity of Daily Living in elderly patients.

Results and Discussion: The number of prescriptions with polypharmacy was 80% in this study. The incidence of Potentially Inappropriate Medications based on the 2019 Beers criteria was still very high in 55 geriatric inpatients. 12 days survival was 94.4% for the Charlson Index of 0, decreasing to 33.33% for the Charlson Index of 3. Katz Activity of Daily Living and the number of drugs was significantly higher in the Potentially Inappropriate Medications group ($P<0.05$ for both). We found a weak positive correlation between Potentially Inappropriate Medications and polypharmacy in the aging patient ($r = 0.232$, $P < 0.05$).

Conclusion: An increase in the number of medications taken by elderly patients and Potentially Inappropriate Medication occurrence is closely related to insufficiency in activities of daily living. Healthcare professionals should collaborate to reduce the risk of polypharmacy and Potentially Inappropriate Medications in geriatric patients to promote their quality of life in the future.

Keywords: Elderly; Polypharmacy; Potentially Inappropriate Medications; Charlson Comorbidity Index; Katz Activity of Daily Living

EP-19

Intensity and Adaptation of Stress in Essential Workers during COVID-19 Pandemic

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Introduction: The COVID-19 pandemic, global public health crisis, has been lasting longer than expected and, as a consequence, social and mental health complications were incident depending on individual's stress resilience. Many professionals were working from home under movement control order, although essentials workers like food delivery, courier service workers and bank staffs are required to work on site, in the midst of fear and uncertainty.

Objective: This study was conducted to determine the stress level of the essential workers of daily life in Malaysia during COVID-19 pandemic.

Methods: This cross-sectional study was conducted for four weeks which included consented 90 food delivery or courier service workers and 60 bank staffs by convenient sampling. A set of questionnaires with standardized Perceived Stress Scale -10 (PSS) and stress adaptation methods was distributed via Google form and PSS score was calculated for recalled stress level during first wave and current stress level during third wave of COVID-19 pandemic. The data were analyzed by using SPSS version 22.

Results and discussion: PSS score during first wave and third wave of pandemic were 19.84 ± 0.71 and 19.22 ± 0.68 respectively. PSS score for first wave and third wave of pandemic were 19.03 ± 0.9, 19.54 ± 0.9 for food delivery or courier service workers and 21.12 ± 1, 18.70 ± 0.9 for bank staffs respectively. All data expressed moderate level of stress although significant difference was not detected between types of works, and different waves of COVID-19 pandemic. Methods of stress adaption included aroma therapy (36 %), listening music (26 %), confined with family/friends (22.6 %) and doing exercise (10 %).

Conclusion: Essential workers expressed moderate level of stress during first and third waves of COVID-19 pandemic regardless of their types of job. Aroma therapy is the most chosen method for stress adaptation.

Keywords: Stress, Essential workers, Adaptation

Effectiveness of construction of concept map in understanding factors affecting glomerular filtration rate (GFR) among second year undergraduate medical students

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Introduction: Concept maps can display network of relationships between concepts and by integrating aspects of pathophysiology, concept maps encourage a multidisciplinary approach to learning.

Objectives: To compare the effectiveness of construction of concept map on short essay question scores among undergraduate medical students and to investigate students' perceptions on concept mapping as a learning tool.

Methods: 29 second-year undergraduate medical students, undergoing urinary system module at a medical college in Malaysia were involved in this study. Students were randomly divided into four groups for the construction of a concept map on a topic. Each group were asked to create a concept map on "factors affecting glomerular filtration rate" topic. All students attended face to face lectures on all the topics covered in the module and completed the concept map on the topic after the lecture. At the end of the module in the summative assessment, two short essay questions (SEQ) were assessed. One SEQ (SEQ 2) was on the topic covered through face-to-face lecture and one SEQ (SEQ 1) was on the topic covered through face-to-face lecture with concept mapping. Online feedback questionnaires were collected to compare students' perspectives on the effectiveness of concept map as a learning tool.

Results: A significant increase in the mean short essay question scores was observed in the short essay question which was from the topic covered by face-to-face lecture with concept mapping. (P-value= 0.00016063*).

Discussion: The majority of the students agreed that concept mapping improves critical thinking skills, helps to visualize concepts, helps to understand concepts and construction of concept map was an appropriate learning strategy.

Conclusions: The new concept-mapping construction on a topic resulted in a higher SEQ score compared to the SEQ score on topics without concept mapping and construction of concept map was perceived favorably by the students.

Keywords: face to face lectures; concept mapping; glomerular filtration rate; undergraduate medical curriculum; medical education

EP-21

Misinformation Epidemic: Are Doctors Sufficiently Trained to Deal with This New Problem?

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Introduction: Ever since the COVID-19 pandemic began governments and healthcare authorities all over the world have been fighting the disease caused by the coronavirus, and the misinformation shared through online media. Three years have passed in controlling the pandemic by promoting personal protective measures and vaccines, but the spread of misinformation has infested beyond the pandemic and could claim more lives and cause morbidity in the future if not addressed properly, as evidenced by the declining childhood vaccination rates and raise of vaccine-preventable diseases in some parts of the world

Literature Review: General population has increased access to health-related information online in recent years. The credibility and accuracy of the source of information are not always verifiable. When presenting to a clinical setup, the patients pose questions guided by the misinformation they learned and hinder the diagnostic and treatment pathways. The physicians are responsible for clarifying the queries and educating the patient with updated factual knowledge.

Methods Used: Literature databases (PubMed, Scholar) were searched for specific needs assessment in clinical communication skills published after 2020. Very little research was done on the skill required to train doctors in controlling misinformation at the clinical level.

Discussion: Current medical education curricula globally, do not focus on communication skills where a physician is required to disprove the claims arising from misinformation. The current curriculum is in the early stages of realization of this gap in communication skills. In hindsight, most misinformation arose from misinterpretation of research knowledge and bending the reality to provoke fright among the masses. As cultural and regional influences are high in the extent of belief of misinformation, multiple specific needs assessments are required worldwide.

Conclusion: New educational programs for doctors targeting research communication are essential to address the needs of current clinical practice and shortcomings of the current curriculum.

Keywords: needs assessment, curriculum, patient communication, clinical skills

Gender and Ethnicity Differences in Lifestyle and Stress Factors among Covid-19 Vaccinated Medical Students at a Private Malaysian University

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Introduction: COVID-19 pandemic had a significant negative influence on the world's population, especially on health, financial position, and social lives. Success of a student is greatly influenced by stress and lifestyle.

Objectives: We aimed to evaluate the gender and ethnicity differences in lifestyle and stress factors among COVID-19 vaccinated medical students at a Private Malaysian University.

Methods: A cross-sectional study was conducted among 345 COVID-19 vaccinated medical students who were willing to participate in the study. The demographic details were collected after obtaining their consent for participation. Lifestyle and stress questionnaire was administered online to analyze their lifestyle and stress factors. Multiple logistic regression was used to analyze the data.

Results and discussion: In terms of stress factors, females tend to bring work home at night, have insufficient hours to do all duties, have altered appetites and a desire to binge or skip meals, experience mood swings, struggle with decision-making, have poor concentration and memory, and experience an increase in muscular aches. Malay and Chinese are less likely to experience muscular pain. In terms of lifestyle, females are significantly less fit than males since they spend more time relaxing and exercising seldom. Chinese are less likely than other ethnicities to have sick parents. Males are prone to be social smokers and drink infrequently. Chinese are less prone to be obese and are capable of handling stress.

Conclusion: Our findings indicate that the COVID-19 outbreak has made a significant impact on the mental health, education, and daily routine of students.

Keywords: Gender, Ethnicity, Lifestyle, Stress, Medical Students.

EP-23

Analysis of Self-Esteem and Resilience Level among Medical Students of a Private University in Malaysia

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Introduction: The intense workload of the medical curriculum can act as the longterm major driver of developing mental health issues among medical students. To successfully deal these cognitively demanding academic tasks, students need to possess high self-esteem and resilience. For that reason, it is essential to assess self-esteem and resilience among medical students.

Objective: By using reliable questionnaire, this study aims to evaluate self-esteem and resilience level among medical students of UniKL RCMP.

Methods: A total of 204 preclinical medical students participated in this cross-sectional study. This study used the Rosenberg scale questionnaire. The data collection was done through distribution of online forms by using a simple random selection method. The acquired data were analysed with SPSS v. 27 and Excel 2016. Students' T test was used in data analysis.

Results: The mean self-esteem level of medical students stands at score 17. Although there is no significant overall gender difference ($p = 0.12$) of self-esteem, a considerable portion of males (22%) express high self-esteem, which is 6% higher than that of females (16%). Similarly, larger proportion of males (15%) possess the high resilience level compared to the females (12%). Of note, students with low-esteem level (38%) and low resilience level (28%) are accumulated among year 2 students in contrast to the year-1 students.

Discussion: Although overall self-esteem score is normal, the score 17 is at bottom level of the normal range; which highlighted the need to boost self-esteem among students. A considerable portion of high self-esteem and resilience students among males indicate the need to find gender dependent factors.

Conclusion: Senior preclinical medical students have more potential to hold low self-esteem and low-resilience level. Precipitating factors seem to be linking with the academic curriculum. It is essential to uncover those factors which drive the downward trend of self-esteem and resilience.

Keywords: Self-esteem, resilience, medical students, Rosenberg

Antibacterial Potential of a Nanoemulsion Carrier against Skin Microflora

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Introduction: Pharmaceutical dosage form is commonly contained with active pharmaceutical ingredients and excipients. The excipients are essential but usually exert little or no therapeutic effect. Some excipients act as carriers to deliver drugs to the absorption points or sites of action. Carrier such nanoemulsion can be formulated with additional therapeutic effect that provides multiple benefits once incorporated with intended drugs.

Objective: The present study aims to investigate the antibacterial property of the formulated nanoemulsion carrier against selected skin microflora.

Methods: The nanoemulsion carrier was redeveloped into two separate formulations, one with phenonip and another without phenonip, based on documented formulation with the aid of an emulsifier at a high-shearing stir. Both nanoemulsion carriers were evaluated in terms of the particle size, polydispersity index, and zeta (ζ)-potential to ensure the physical stability closely similar to that previous formulation. The antibacterial capability of the redeveloped nanoemulsion carriers against skin microflora was assessed through the Kirby-Bauer well diffusion method.

Results and Discussion: Both nanoemulsion carriers appeared to be in a stable condition with particle size within the range of nanosize (<500 nm). The PDI values showed acceptable monodisperse characteristics and larger ζ-potential values were obtained suggesting a stable repulsion between particle charges. Based on the zones of inhibition (ZOI) for antibacterial assessment, both formulated nanoemulsion carriers exerted deemed antibacterial effects against *Staphylococcus aureus* (ZOI: 11.0 mm), methicillin-resistant *S. aureus* (ZOI: 7.0 mm) and *S. epidermidis* (ZOI: 6.0 mm). However, the treatment with both nanoemulsion carriers exerted no inhibition activity against *Pseudomonas aeruginosa*.

Conclusion: Despite the deemed positive outcomes, it was suggested that the formulated nanoemulsion carriers can be utilised as a pharmaceutical carrier for transdermal or topical once incorporated with intended drugs for multiple therapeutic actions in a single application.

Keywords: Nanomedicine; Nanoemulsion; Antibacterial; Skin microflora; Pharmaceutical

EP-25

Experience, Perception, and Attitude towards Cyberbullying among the Undergraduate Students of UniKL RCMP

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Introduction: Cyberbullying is a rising issue globally and is a cause for mental health issue. Many studies have suggested that there is a significant difference in a person's experience, perception, and attitude towards cyberbullying depending on their gender.

Objective: The aim of this study was to study the experience, perception, and attitude regarding cyberbullying among UniKL-RCMP students.

Method: This is a cross-sectional study involving undergraduate students of UniKL-RCMP. The sampling method was a non-probability convenient study using a questionnaire that was uploaded online. Students were invited to take part in the study. The respondents' genders and their answers were then computed as the variables of this study. The data was analysed using a Chi-Square Test in the SPSS software to test the significance in gender to a specific question from the questionnaire.

Results: 170 students responded to this study (39 males, 131 females). Most of the respondents have no experience being either victim (Males= 51.3%; Females= 59.5%) or perpetrator (Males= 69.3%; Females= 86.3%) in cyberbullying. The majority who have been victims experienced cyberbullying through social media (74.4%), followed by texting (48.8%), and being sent harassing pictures (28.0%). Social media (75.0%) is also the main medium of cyberbullying for perpetrators, other than through texting (34.4%) and looking through their cellphone (25.0%). Both males (82.1%) and females (94.7%) have good perception on cyberbullying. This also applies to attitude towards cyberbullying as the majority for both males (76.9%) and females (78.6%) have good attitudes towards the issue. Most of the respondents agree to "create a policy made on cyberbullying" (47.6), followed by "getting parents and educators involved to talk about this" (27.6%), and "have the administration discuss this issue" (18.2%).

Conclusion: Overall, both male and female students of UniKL-RCMP have good perception and attitude towards cyberbullying. Likewise, the majority of both genders have no experience being involved in cyberbullying either as a victim or as a perpetrator.

Keywords: experience, perception, attitude, cyberbullying, undergraduate, UniKL-RCMP

Knowledge, Perceptions and Willingness to Participate in Biobanking among Young Adults in Ipoh, Perak, Malaysia

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Introduction: Biobank generally refer to structured collections of biological samples and associated data, stored for the purposes of present and future research. It typically handles human biospecimens - such as tissue, blood, urine and information related to the donors. Biobank has become a necessity to the developed countries as it can provide access to large amounts of genetic and electronic health record data, so more efficient further research can be done, so more genetic component of disease can be identified and cured.

Objective: The objective of this study is to determine the knowledge, perceptions and the willingness to participate in biobanking among the young adults in Ipoh, Perak.

Methods: A cross sectional study using a random sampling method was conducted in selected places in Ipoh, Perak during 8th January 2018 until 12th January 2018. Our respondents were required to answer a pre-designed questionnaires consisting of 4 parts that cover sociodemography, knowledge, awareness, and perception towards biobank in Malaysia. Data was collected, and analysed using SPSS (version 23).

Results: We manage to get 210 young adults to respond to our study. The results show that the knowledge regarding biobank is high among the young adults of Ipoh, Perak as most have scored well in the knowledge section of our questionnaire (68.37%). In addition, our results indicate that a majority of the respondents (60.2%) are willing to participate in biobanking. Our results have also shown that the young adults of Ipoh generally have a positive perception towards biobanking (88.3%) and there is no significance relationship between perception and willingness for them to participate in biobanking (p-value =0.402).

Conclusion: Our findings showed that the young adults in Ipoh, Perak has good knowledge and a positive perceptions regarding biobanking. However, vigorous campaign need to be conducted to inform the public of the need to support biobanking and to relieve them of any concerns they might have regarding biobanking procedures and application.

Keywords: Biobanking, specimens, sociodemography

EP-27

A study to compare the variation in shape, appearance , position and morphometric variations of mental foramen among Indian, Chinese and Malay Population visiting AIMST Dental Care Centre Using Digital Panoramic Radiographs- A Radiographic Study.

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Introduction: Mental Foramen (MF) is a bilateral funnel-like opening located anterolateral aspect of the body of mandible gives path to mental nerve and vessels. Assessing the mental foramen helps to avoid mental nerve injury during dental treatment procedures.

Objective: To detect the variation in shape, appearance, position and morphometric variations of MF in digital panoramic radiographs among the three different ethnic groups.

Methodology: Cross sectional retrospective study conducted on 30 Indian, 30 Chinese and 30 Malay patients digital panoramic radiographs of AIMST University, taken using Sordex digital X-ray unit with tube potential: 60-80 kV, tube current: 4-12 mA, focal size: 0.5 mm, exposure time: 11.3 s and magnification factor of 1:1.25.

Results: Among the three ethnic groups majority exhibited ME oval shape, Position of MF in Malay group on left side is between the two premolars and posterior to second premolar on right side Chinese and Indian groups, position of MF was below tooth the two premolars. No significant difference was observed in the appearance of MF between three major ethnic groups, significance difference in morphometric variations noted on the right and the left side among the three different ethnic groups

Discussion: In polish population MF was oval in shape, this is in accordance with our study. No significant difference was observed in the appearance of mental foramen in the present study. But previous studies shows significant difference . No significant difference observed in the position of the mental foramen in the present study. Statistically significant difference in the morphometric variables of the MF was noted.

Conclusion: Present study concludes shape is oval, with significant difference in the morphometric variation of MF among the three ethnic groups.

Key words: Mental foramen (MF), shape, appearance, position, morphometric variation.

Perception of Ipoh residents towards government and private primary healthcare facilities and their preference

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Introduction: Primary Healthcare Institutes in Malaysia is widely divided into two sectors, which are the government and private sectors. Several studies have shown that there are differences between the two sectors in a lot of aspects. However, the public's perception as well as their preference between the two show huge discrepancies when compared to the actual reality of the two sectors.

Methods: A cross-sectional study was conducted among 329 Ipoh residents using convenience sampling method after obtaining institutional ethical approval. Prior to data collection using online questionnaires, informed consent was obtained. Data analysis was done using SPSS. The categorical data was represented as frequency and percentages. The association between the socio-demographic factors and the preference and perception was analysed using the Chi-square test.

Results and Discussion: The respondents of this study were mostly female, younger age group, average monthly income. Most of the respondents perceive that private clinics offer quality services, equipped with new technology and equipment, and efficient services despite the higher cost of treatment. The public's perception on the cost of treatment in government and private healthcare facilities is found to not have any significant association with age, gender, race, monthly income or number of family members. This might be because the public were not concerned about the cost of the treatment but preferred to get efficient and quality services. There was a significant association between age and the perception ($p=0.009$) and preference ($p=0.012$) in selecting private clinics among the respondents.

Conclusion: In conclusion, Ipoh residents favored private healthcare facilities or services for their efficiency offered with quality care, though the cost of treatment is high. Sociodemographic factor such as age and the quality healthcare services provided is found to be the influencing factor on their preference towards government or private healthcare facilities.

Keywords: Primary healthcare facilities, Government, Private, Quality services

EP-29

Exploring Influential Factors on Static Balance among Undergraduate Students

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Introduction: Static balance pertains to the capacity to sustain stability in posture and uphold the alignment of one's center of gravity concerning a stationary and unmoving foundation of support. Among young adults, possessing adequate static balance stands as a pivotal element augmenting motor skills across a spectrum of daily physical pursuits, encompassing both sporting engagements and routine exercises.

Objective: To examine the correlations between various factors and static balance among undergraduates at the Faculty of Medicine, Universitas Sumatera Utara, including gender, age, weight, height, body mass index (BMI), waist and hip measurements, waist-hip ratio, support base area, and strength of lower limb muscles.

Methods: This study adopts an analytic observational approach using a cross-sectional design. The participants selected for this research are preclinical students enrolled in the undergraduate program at the Faculty of Medicine, Universitas Sumatera Utara, recruited through consecutive sampling. Information regarding gender and age was collected using a questionnaire, while other variables were obtained through direct measurements. The assessment of static balance was conducted utilizing the BESS (Balance Error Scoring System) test.

Results and Discussion: The evaluation of static balance revealed that the highest number of errors occurred during the single-leg stance on a foam surface subtest (with a median score of 7 out of a maximum of 10). The average total BESS score was calculated as 13.57, with the highest observed score reaching 27. Upon conducting a bivariate analysis, notable correlations were found between age, weight, body mass index (BMI), and hip circumference with static balance. However, the analysis indicated that gender, height, waist-hip ratio, support base area, and lower extremity muscle strength did not exhibit statistically significant correlations with static balance.

Conclusion: Static balance demonstrated significant correlations with age, weight, body mass index (BMI), and hip circumference.

Keywords: Anthropometry, Balance Error Scoring System (BESS), Postural stability, Static Balance, Students

Traumatic Thumb Nail Injury in a 6-Year-Old Boy and Subsequent Healing Process: A Case Report

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Background: This presents a case of a 6-year-old boy who sustained a traumatic injury to his thumb nail due to being pressed by a car door while closing the car door.

Case description: The injury resulted in damage to the nail bed, necessitating observation and management over a period of 3 months. Shedding and regrowth process of the injured nail, as well as the activities the boy was able to perform during the healing period, were recorded. Observational data was collected through regular follow-up appointments with the boy and through parental reports. The healing process involved stages of nail discoloration, detachment, and subsequent regrowth. Despite the injury, the boy was able to engage in various age-appropriate activities, albeit with some modifications to accommodate the injury.

Conclusion: This case study contributes to the understanding of nail injuries in pediatric patients and highlights the resilience and adaptability of children in coping with such injuries.

Keywords: thumb nail, injured nail, nail discoloration

EP-31

Human Respiratory Syncytial Virus (HRSV) Subtype A and B Infection Among Children Aged Under 5 Years Old Hospitalised with Respiratory Infections Between January 2023 and April 2023

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Introduction: Human Respiratory Syncytial Virus (HRSV) has affected an estimation of 33.1 million children under 5 years old, which includes 3.6 million of hospitalization and 101,000 death in year 2019, worldwide. Knowledge of the circulating virus subtype is important for prevention and control strategies including effectiveness of currently available drugs and vaccines. In Malaysia, the Institute for Medical Research (IMR), National Institutes of Health (NIH) is one of the National Influenza Centre under World Health Organization (WHO) and involves in carrying out Severe Acute Respiratory Infection (SARI) surveillance programme under the Ministry of Health Malaysia.

Objective: The objective of this study is to detect HRSV subtype A and B in specimens collected from children aged under 5 years old hospitalized in Government Health Facilities, from January 2023 till April 2023.

Methods: Between January 2023 and April 2023, 55% (130/238) of respiratory specimens from hospitalised children under 5 years of age were received in IMR from all states in Malaysia. Samples were negative influenza screened for HRSV subtype A and B infection using Real-Time Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) assay.

Results and Discussion: The results showed that 0.8% (1/131) HRSV-A and 11% (15/131) HRSV-B were detected in samples collected from hospitalized children under 5 years. This included, 69% (11/16), 0.8% (1/16) and 0.8% (1/16) of samples collected from infants aged <1 year old, toddler aged between 1 and 2 years old, and children aged between 3 and 4 years old, respectively, positive for HRSV-B. Meanwhile, only one HRSV-A (0.8%;1/16) was detected from samples collected from infants aged <1 year old.

Conclusion: Study showed that infants aged <1 year old was mostly infected with HRSV-B. Among factors contributed to these findings are the inflammation of airways, immaturity of immune system among infants and unavailability of specific HRSV vaccine to control the HRSV infections in children.

Keywords: Human Respiratory Syncytial Virus, real time RT-PCR, respiratory disease, children

The Accuracy of Agnors Histochemistry Staining in Diagnosing Benign, Premalignant and Malignant Prostate Lesion

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Introduction: AgNORs, identical for silver-stained nucleolar organizing regions (NORs) of DNA found on the short ends of acrocentric chromosomes are emphasized in actively proliferating cells. AgNORs histochemistry staining is a lesser known as a marker of cell proliferation.

Method: Eighty-six paraffin blocks diagnosed with nodular hyperplasia, prostate intraepithelial neoplasia and adenocarcinoma of prostate were stained with hematoxylin eosin and p63 immunohistochemistry then stained with AgNORs.

Results and Discussion: The aim of this study was to assess the accuracy of AgNORs histochemistry staining in diagnosing benign, premalignant and malignant prostate lesions, with the result that AgNORs can give information about the proliferation status of the tumors. Output of this study showed a significant difference in AgNORs value between benign and malignant lesions, premalignant and malignant lesions ($p<0.05$), but in benign and premalignant lesion were not significant ($p>0.05$).

Conclusion: In conclusion, AgNORs histochemistry staining has the ability to confirm benign from malignant prostate lesion, and to confirm premalignant from malignant lesion as well. But it cannot do better in differentiating premalignant lesion from benign one.

Keywords: AgNORs, benign, premalignant, malignant, prostate lesions

Exploring the Anti-fungal Activity of Malaysian *Heterotrigona Itama* Propolis against *Candidiasis*

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Background: Propolis, a resinous substance collected by bees from various botanical sources, is esteemed for its medicinal properties and widely utilized in traditional and alternative medicine owing to its antimicrobial and antioxidant attributes.

Objective: This study aimed to identify bioactive compounds with anti–fungal activity present in Malaysian *Heterotrigona itama* (*H. itama*) propolis against *candidiasis*.

Methods: *H. itama* propolis was extracted using the maceration method, and its phytochemical composition was analyzed via Ultraviolet–visible (UV–vis) spectroscopy, Fourier–transform infrared spectroscopy (FTIR), and Gas Chromatography–Mass Spectrometry (GC–MS). Antioxidant activity was assessed using the DPPH assay, while anti–fungal properties were evaluated using the agar disk diffusion method.

Results and Discussions: The ethanolic extraction of *H. itama* propolis yielded aqueous (AqE) and alkaline hydrolyzed (KPE) propolis extracts at rates of 38.75% and 30.47%, respectively. The KPE demonstrated a total phenolic content (TPC) of 0.723 ± 0.06 mg GAE/g, a total flavonoid content (TFC) of 38.36 ± 3.19 mg QE/g, and a total terpenoid content (TTC) of 4.60 ± 0.40 mg GAE/g. Conversely, the AqE exhibited TPC, TFC, and TTC levels of 2.17 ± 0.06 mg GAE/g, 6.75 ± 0.85 mg QE/g, and 2.94 ± 1.08 mg GAE/g, respectively. The *H. itama* propolis extract, particularly the KPE variant, demonstrated a notably higher TPC and TFC compared to the AqE, indicating its potential richness in bioactive compounds essential for anti–fungal activity benefits. GC–MS and FTIR analyses confirmed the presence of bioactive compounds with antioxidant and anti–fungal properties, including phenols, hexadecanoic acid (palmitic acid) and octadecanoic acid (stearic acid). The *H. itama* propolis extract also demonstrated significant anti–fungal activity against *Candida* species.

Conclusion: The findings suggested that *H. itama* propolis extracts hold promise as valuable ingredients in pharmaceutical and cosmetic formulations.

Keywords: *Heterotrigona itama* propolis, GC–MS, FTIR, antioxidant activity, anti–fungal activity

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