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Prof Dr. Abdul Razak Sulaiman

Assalamualaikum & Salam Sejahtera

May Allah shower us with His mercy, grace, and blessing.

I would like to take this moment to extend my heartfelt gratitude to you and your team for the exceptional organization of the MRP and the publication of the 2023 e-bulletin.

Over the past few years, I have had the privilege of witnessing remarkable accomplishments by USM researchers. While publications in high-impact journals and the acquisition of grants reflect a notable upward trajectory, it is imperative to recognize that such metrics only scratch the surface of our research endeavors. I am delighted to mention that the quality of research and presentations has consistently remained at an exemplary level. The diversity of topics presented at the MRP, spanning from fundamental, clinical research and innovation, is a testament to the breadth and depth of expertise within our academic community.

Our academics are making significant strides in various areas, including impactful fundamental and translational research, active community engagement, and fruitful collaborations with industry partners. These achievements are a reflection of the unwavering commitment of our university towards its vision and goals, serving as a driving force behind our research endeavors.

Through this bulletin, we aim to illuminate the outstanding contributions of our researchers, further showcasing our research excellence and its profound implications for society.

Once again, I extend my sincerest congratulations to you and your team. I am hopeful that PPSP will continue to reach new heights, paving the way for groundbreaking research that will positively impact society and inspire future generations.

Thank you.

Prof. Dr. Abdul Razak Sulaiman
Dean
School of Medical Sciences
Universiti Sains Malaysia



Assoc. Prof. Dr. Asrenee Abdul Razak

Assalamualaikum & Salam Sejahtera

Dear Dr. Rohimah Mohamud, Dr. Zefarina Zulkafli, and Esteemed Organizing Committee Members,

On behalf of our academic community, I extend heartfelt congratulations and gratitude to you for the successful organization of the Monthly Research Presentation (MRP) and the publication of the 3rd MRP bulletin for 2023.

As dedicated academics, our goal extends beyond mere professional obligations. We aim to inspire and enlighten our peers through the sharing of our discoveries. The MRP serves as more than just a checkbox for professional growth reviews or promotion cases; it is a platform dedicated to the dissemination of knowledge and the promotion of research collaboration. With the endorsement of PPSP's top management, the MRP plays a pivotal role in providing our academia with the opportunity to showcase their findings and innovations, fostering a culture of sharing and collaboration.

I wish to extend my deepest appreciation to all the knowledgeable speakers who generously shared their time and insights, enriching the content of this bulletin. The MRP not only facilitates the exchange of ideas but also serves as a catalyst for stimulating discussions and fostering interdisciplinary collaboration. I encourage everyone to actively participate in and utilize this platform for future endeavors.

In closing, I extend my best wishes to all readers. May the knowledge and insights gained from this bulletin ignite a passion within you to contribute wholeheartedly to the scientific community.

Thank you,

Assoc. Prof. Dr Asrenee Ab Razak
Deputy Dean (Research & Innovation)
School of Medical Sciences
Universiti Sains Malaysia

**Dr Rohimah Mohamud**

Department of Immunology

**Dr Zefarina Zulkafli**

Department of Haematology

Assalamualaikum & Salam Sejahtera

On behalf of the organizing committee, we extend our deepest gratitude to you for entrusting us with the chairmanship of MRP 2023. Your support and encouragement have been instrumental in making this event a success. We would also like to express our heartfelt appreciation to all the speakers and emcees whose dedication and efforts contributed to the smooth organization of this research presentation.

Serving as chairperson and co-chair of the committee over the past months has been both an honor and a privilege. While the logistics of organizing such a meeting may seem straightforward, it required immense effort and teamwork to bring it to fruition. We are truly grateful for the opportunity and the meaningful connections we have forged along this journey.

One of the most invaluable aspects of the talks has been the opportunity to advocate our perspectives within the scientific community. Research meetings like MRP serve as vital platforms for academics and researchers to present their findings, engage in discussions, and cultivate valuable academic and interpersonal relationships that may pave the way for future collaborations. Furthermore, MRP plays a crucial role in providing a forum for networking and enhancing visibility for potential collaborators.

The 3rd MRP bulletin stands as a testament to the collective expertise and dedication of the speakers from various departments of PPSP. By showcasing cutting-edge research topics, this anthology offers readers valuable insights far earlier than traditional publication timelines would allow. Additionally, the inclusion of perspectives from our postdoctoral research fellows enriches the diversity of knowledge presented.

We trust that this bulletin will serve as a valuable resource for readers, furthering the university's mission of transforming higher education for future sustainability. With your continued support, we hope to see MRP maintained for many years to come, nurturing a culture of innovation and collaboration within our academic community.

Thank you once again for your unwavering support.

Warm regards,

Dr. Rohimah and Dr. Zefarina

OUR MRP TEAM

Session 2023



MRP Team 2023



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Che Lah**
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- Chairperson



**Dr. Zefarina
Zulkafli**
- Deputy
Chairperson



List of
EMCEES

Congratulations to all
dedicated Emcees

List of EMCEES

JANUARY



**PROF. DR. LIZA SHARMINI
AHMAD TAJUDIN**

Department of Ophthalmology & Visual
Science

FEBRUARY



**ASSOC. PROF. DR TUAN
HAIRULNIZAM BIN TUAN
KAMAUZAMAN**

Department of Emergency Medicine

MARCH



**PROF. DR. CHAN YEAP
YEAP**

Department of Microbiology and
Parasitology

MAY



**ASSOC. PROF. DR RAFIDAH
HANIM SHOMIAD @ SHUEB**

Department of Microbiology and
Parasitology

JUNE



**ASSOC. PROF. DR. WAN MOHD
ZAHIRUDDIN WAN MOHAMMAD**

Department of Community Medicine

JULY



DR. LIDAWANI LAMBUL

Department of immunology

AUGUST



DR. SURIANTI SUKERI

Department of Community Medicine

SEPTEMBER



**PROF. DR. KAMARUL
IMRAN MUSA**

Department of Community Medicine

OCTOBER



**ASSOC. PROF. DR.
MUZAIMI MUSTAPHA**

Department of of Neurosciences

NOVEMBER



DR. NAZIHAH MOHD YUNUS

Human Genome Centre

*Hear from our
dedicated*
SPEAKERS

Congratulations to all
dedicated speakers



Cancer-associated fibroblasts (CAFs) in colorectal cancer (CRC) have a dual role, influencing tumor progression through complex communication with cancer cells. Despite challenges in characterizing CAFs due to heterogeneous biomarkers, emerging targets like AOC3 and LRRC17 offer potential avenues for studying fibroblast activation and developing targeted therapies for CRC.

Dr Marahaini Musa

Human Genome Centre



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"Since 2007, Hospital USM has implemented the UKALL chemotherapy protocol, significantly improving overall survival rates for pediatric leukemia patients through advancements in diagnostic techniques and treatment strategies. Common clinical presentations include hepatomegaly, splenomegaly, and lymphadenopathy, while prognostic factors affecting survival include CSF involvement, weight percentile, total white cell count, and relapse presence, with early response to steroid therapy and age at diagnosis being favorable factors".

Assoc. Prof. Dr Norsarwany bt Mohamad

Department of Paediatrics



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"Epilepsy affects millions worldwide, with a prevalence of 7.8 per 1000 persons in Malaysia, prompting significant research advancements. Treatment focuses on precision therapy, utilizing antiseizure medications targeting genetic abnormalities and neuronal pathways, while new technologies like neurostimulation and epilepsy surgery offer hope for those resistant to drug therapy"

Dr Sanihah Abdul Halim

Department of Internal Medicine



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"Tinnitus, derived from the Latin word "tinnire," affects 10-15% of adults worldwide, with 0.5% experiencing severe symptoms. While there is no cure, treatment options like hearing aids, sound therapy, and medications can help manage perception. Research on Quranic rhythm therapy showed promising results in reducing tinnitus severity, indicating potential alternative treatments. The USM Tinnitus Clinic collaborates with Audiology Clinic in PPSK to provide specialized care, with plans to expand collaborations for enhanced patient support".

Assoc. Prof. Dr Nik Adilah Nik Othman

Department of Otorhinolaryngology



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"Malaysia achieved validation for eliminating mother-to-child transmission of HIV and syphilis in October 2018, a significant milestone in the WHO Western Pacific Region. A nationwide assessment conducted between July and October 2021 explored the development of EMTCT programs and access to healthcare services among women living with HIV since 2018, aiming to inform ongoing practices and improvements in healthcare delivery."

Assoc. Prof. Dr Zaharah Sulaiman

Women's Health Development Unit (WHDU)



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"Triple-negative breast cancer (TNBC) is associated with poor prognosis and limited treatment options. This study investigated the expression levels of specific microRNAs (miRNAs) in TNBC patients' cancerous and normal adjacent tissues, finding significantly lower levels of miR-27b and miR-451 in cancerous tissues. These findings suggest the potential use of miR-27b and miR-451a expression levels as predictive markers for chemotherapy response in TNBC patients".

Dr Ahmad Aizat Abdul Aziz

Human Genome Centre



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"Microbe Recruitment System (MRS) simplifies the process of finding postgraduate students or research assistants for lecturers by allowing them to post research topics and academic requirements online. With user-friendly features and positive feedback from lecturers, MRS is expected to enhance productivity in research and may be expanded to other departments within Universiti Sains Malaysia (USM) in the future".

En Muhammad Nasrul Farhan b Samsudin

Department of Medical Microbiology and Parasitology



"Sim LearningSpace (SLACE) enhances medical education through immersive simulation experiences, addressing deficiencies with high-fidelity manikins and improved simulation rooms, earning recognition for its effectiveness in quality competitions. This approach allows students to practice safely, make mistakes, and receive valuable feedback to achieve educational objectives in emergency medicine training".

Assoc. Prof. Dr Tuan Hairulnizam Tuan Kamauzaman

Department of Emergency Medicine



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"The Virtual Anatomy Museum (VAM) was created by the Department of Anatomy at the School of Medical Sciences, USM to provide virtual access to essential anatomical specimens for students and the community. It received positive feedback for its user-friendly interface and valuable content, winning awards for its innovative approach to teaching and learning".

Assoc. Prof. Dr. Zul Izhar Mohd Ismail

Department of Anatomy



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"Anatomy competency is crucial for safe clinical practice, prompting a study to explore its core elements in modern medical curriculum. Through a two-phased approach involving consulting stakeholders and profiling identified elements, the study revealed cognitive, psychomotor, affective, and intrapersonal competencies essential for clinical practice, facilitating the design of a competency-driven anatomy curriculum".

Assoc. Prof. Dr. Siti Nurma Hanim Bt Hadie@Haji

Department of Anatomy



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"Research on Heterotrigona itama bee bread suggests promising protective effects on the male reproductive system in obesity, improving parameters such as testicular oxidative stress, sperm quality, and reproductive hormone levels in male rats fed a high-fat diet. These findings underscore the potential of bee bread supplementation as a natural intervention to mitigate the adverse impacts of obesity on male fertility".

Dr. Ainul Bahiyah Abu Bakar

Department of Physiology



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"Cardiac MRI is essential for diagnosing cardiovascular pathologies like myocardial fibrosis. This study aims to establish normal values for native T1 and T2 relaxation times and extracellular volume fraction (ECV) among healthy volunteers to improve diagnostic accuracy".

Assoc. Prof. Dr. Khairil Amir Sayuti

Department of Radiology



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"Through interdisciplinary collaboration and a bold vision guided by the Moonshot Approach, his team created a smart beehive that promotes sustainability, environmental stewardship, and innovation in agriculture. Their work underscores the power of integrating art and science to address complex challenges and inspire future innovation".

Dr. Mohd Zulkifli Mustafa

Department of Neurosciences



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"The study among male civil servants in Kelantan revealed a significant proportion of inappropriate treatment seeking behavior, influenced by factors such as income, marital status, and attitudes towards illness. Qualitative findings underscored the need for gender-sensitive and evidence-based health services, highlighting potential online interventions to improve men's health-seeking behavior".

Assoc. Prof. Dr. Tengku Alina Tengku Ismail

Department of Community Medicine



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"This research explores the potential of combining ranibizumab with Mitomycin C in glaucoma surgery for rabbits' eyes, aiming to address the issue of excessive scarring, a common cause of surgical failure. By investigating alternative modulation strategies, the study seeks to enhance the effectiveness and safety of glaucoma surgical interventions".

Assoc. Prof. Dr. Azhany Yaakub

Department of Ophthalmology & Visual Science



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"This presentation explores the activation mechanism and signaling role of TNFR2 within the tumor microenvironment, detailing its expression and function in various immune cells. It also evaluates the potential advantages and challenges of targeting TNFR2 in immunotherapy. Furthermore, it analyzes the potential obstacles in the clinical development and application of targeted anti-TNFR2 agonists and inhibitors."

Dr. Rohimah Mohamud

Department of Immunology



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"The partial verification bias (PVB) poses challenges in accurately assessing diagnostic test performance, leading to biased measures such as sensitivity and specificity. Addressing this issue, the PVBcorrect package in R programming facilitates correction of PVB, making it more accessible for researchers and enhancing the validity of diagnostic studies. By identifying and acknowledging PVB in research planning and utilizing tools like PVBcorrect, researchers can improve the accuracy of diagnostic test evaluations, ensuring more reliable clinical decisions."

Dr. Wan Nor Arifin Wan Mansor

Biostatistics and Research Methodology Unit



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"Endothelial dysfunction, characterized by impaired nitric oxide (NO)-mediated vasodilation, precedes atherosclerosis development and cardiovascular disease (CVD). This study compared endothelial microparticle (EMP) levels in hypercholesterolemia patients and normal controls, finding significantly elevated EMP counts in hypercholesterolemia. These findings, correlating EMP levels with pulse wave analysis (PWA)-measured endothelium-dependent vasodilation (EDV), suggest EMPs as potential biomarkers for endothelial dysfunction, particularly in hypercholesterolemia patients, aiding in early detection and prevention of atherosclerosis and CVD."

Dr. Nik Nor Izah Nik Ibrahim

Department of Pharmacology



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"This study compares the accuracy, precision, and linearity of point-of-care procalcitonin (PCT) testing in ICU patients with sepsis against automated laboratory testing. Results show no significant differences between the two methods, suggesting the potential efficacy of point-of-care PCT testing in clinical practice".

Assoc. Prof. Dr. Mohd Zulfakar Mazlan

Department of Anaesthesiology



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"Functional Magnetic Resonance Imaging (fMRI) offers a non-invasive means to explore cognitive functions and neural behavior, aiding diverse populations including those with traumatic brain injury (TBI). Studies leveraging fMRI, such as those examining default mode network (DMN) connectivity and working memory in TBI patients, provide insights into neural changes and cognitive impairments, while also facilitating investigation into less explored areas like somatosensory processing and reward networks, enhancing our understanding of brain function across different contexts".

Dr. Aini Ismafairus Abd Hamid

Department of Neurosciences,



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"A TB education program significantly improved knowledge and reduced stigma among secondary school students, as evidenced by increased scores in these domains. While attitudes and practices showed no significant differences post-intervention, highlighting potential areas for further improvement in future educational initiatives".

Dr. Rosnani Zakaria

Department of Family Medicine



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Details of
PRESENTATIONS

High impact research to
overcome difficulties and
foster resilience



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Division of Research & Innovation, School of Medical Sciences

MONTHLY RESEARCH PRESENTATION

Thursday
Jan. 26, 2023
0810-0910

WEBINAR NUMBER **2517 338 7035** PASSWORD **mrpjan2023**

ALL ARE INVITED | CPD POINT [MMA & USM] IS PROVIDED

Presenter 1



Cancer-Associated Fibroblasts in Colorectal Cancer (CRC): Friends or Foes?

DR. MARAHAINI MUSA
(Human Genome Centre)

Presenter 2



Challenges in Managing Children with Leukaemia in Hospital USM

PROF. MADYA DR. NORSARWANY BT. MOHAMAD
(Dept. of Paediatrics)

Chairperson



PROF. DR. LIZA SHARMINI
AHMAD TAJUDIN
(Dept. of Ophthalmology & Visual Science)



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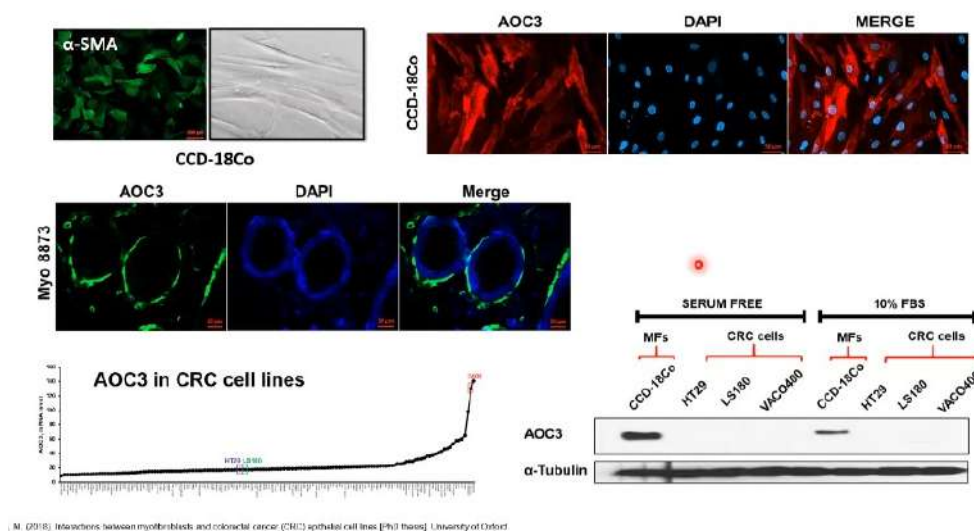
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Cancer-associated fibroblasts in colorectal cancer: Friends or foes?

Colorectal cancer (CRC) is one of the major global health concerns. In Malaysia, CRC is recorded as the second most commonly diagnosed malignancy, affecting males and females. The disease is very heterogenous and this influences patient prognosis and their responses to treatment. One of the factors that contribute to CRC heterogeneity is the tumour microenvironment (TME).

Cancer associated fibroblasts (CAFs) are the major cellular components of the TME. They are poorly defined, very complex and heterogeneous. CAFs are reported to drive colorectal carcinogenesis via bidirectional communication with cancer cells, facilitated by various growth factors, cytokines, and chemokines. CAF-tumour cell crosstalk leads to activation of non-activated fibroblasts into CAFs and promotes cancer cell growth, migration, and invasion.

CAFs can be identified using various biomarkers. However, these markers were found to be heterogenous in expression and not specific to CAF. This leads to confusing definition of CAFs thus limiting our understanding of CAF-cancer cell interplay. Emerging CAF biomarkers namely amine oxidase copper containing 3 (AOC3) and leucine rich repeat containing 17 (LRRC17) are potentially can be used to study fibroblast activation. In addition to fibroblast characterization in vitro, different functional assays can be used to investigate further on the role of crosstalk between CAF and cancer cells in CRC progression. Understanding CAF biology will provide a better insight of CRC carcinogenesis. From the translational perspective, CAF-targeted therapy potentially can be applied as one of the treatment avenues for CRC in the future.



M. (2018). Interactions between myofibroblasts and colorectal cancer (CRC) epithelial cell lines [PhD thesis]. University of Oxford.

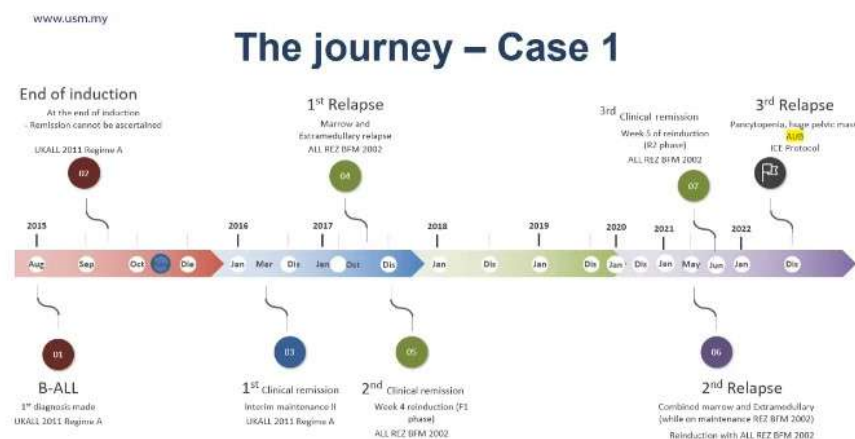
Presented by Dr. Maharaini Musa

Challenges in Managing Children with Leukaemia in Hospital USM

Overall survival of paediatric patient with leukaemia continue to improve. UKALL chemotherapy regime were commenced in Hospital USM since 2007. Patients on UKALL protocol were stratified according to the disease risk factor and specific treatment regime. At the beginning, there was restricted in the usage of cytogenetic analysis to guide the treatment strategies. The minimal residual disease facilities also was not available.

The UKALL protocol has undergone multiple upgrades since it's introduction. Though the medication used did not have many changes, the overall disease stratification for patients treatment had significant improvement since the introduction of cytogenetic analysis and minimal residual disease analysis. Hence patients have better outcomes due to the advancement of diagnostic modalities and more specific risk stratification strategies and improvement in treatment approach as well as supportive care.

Through serial studies done in USM, we concluded that our overall survival for paediatric leukaemia patients was comparable to other developing countries. The results from our research showed that the commonest clinical presentations included hepatomegaly, splenomegaly and lymphadenopathy which are common presentation of acute leukaemia. We have identified several prognostics factors affecting acute leukaemia patients overall survival specific to our patients. The poor prognostics factors included CSF involvement, weight percentile of the 10th to 95th percentile, TWC >50 X10⁹/L at diagnosis and presence of relapse. The good prognostic factors for ALL survival included age less than 10 years and more than 1 year old at diagnosis and early response to steroid therapy. Some of rare presentation of patients with leukaemia in USM were reported and published.



For parents taking care of their children with cancer, the burnout and stressors were high. Hence it is important as part of holistic approach to support the family financially as well as psychologically, thus improve quality of life and might contribute to overall survival of patients. The research and results involving acute leukaemia in paediatric patients in USM has contributed to the local data and will be the source reference for other researchers. Despite limitation of small sample size, every opportunity and information is valuable to increase data availability for future.



Case Report

Malaysian Journal of Paediatrics and Child Health (MJPC) | (Early online - December 2021) | Page 19 of 22

CASE REPORT

MJPC Vol. 27 (2) December 2021

OFFICIAL JOURNAL



ORBITAL SWELLING: AN UNUSUAL CASE OF RELAPSED ACUTE LYMPHOBLASTIC LEUKAEMIA IN A PRESCHOOL CHILD

Muhammad Amiro Rasheeq Mohd Radzi^{1,2}, Ariffin Nasir^{1,2}, Ismail Shatriah^{4,2}, Razan Hayati Zulkeflee^{3,2}, Juhara Haron¹, Norsarwany Mohamad^{1,2}

ABSTRACT

Acute lymphoblastic leukaemia (ALL) is the most frequent childhood cancer. Children usually present with signs of bone marrow failure like recurrent or prolonged fever, pallor, lethargy, bleeding tendencies, bone pain and others. Occasionally they may present with sign of infiltration of leukaemic cells into other organs such as testicular and central nervous system, rarely to the periorbital or orbital region. Similarly in relapse cases, they typically presented either in bone marrow, central nervous system relapse or testicular



First survival study on AL

Malaysian Journal of Paediatrics and Child Health (MJPC) | (June 2020)

ORIGINAL ARTICLE

MJPC Vol. 26 (1) June 2020

OFFICIAL JOURNAL



SURVIVAL OF CHILDREN WITH ACUTE LEUKAEMIA: A SINGLE CENTRE EXPERIENCE

Ariffin Nasir, Nor Fadhilah Zahari, Fahisham Taib, Norsarwany Mohamad

Abstract

Introduction: Acute leukaemia in children accounts for 25-30% of malignant diagnosis. Survival from acute leukaemia continue to improve. Treatment outcome depends on factors like gender, age at diagnosis, parental education, the initial total white cell count (TWC), cerebrospinal fluids (CSF) infiltration, immunophenotype and treatment response. **Objectives:** The objectives were to evaluate the survival of children with acute leukaemia who received chemotherapy and identify relevant factors. **Methodology:** The study was a retrospective record review at the Paediatric Oncology Unit, Hospital Universiti Sains Malaysia (Hospital USM). The data collected depending on pre-set research proforma from the year 1990 to 2010. Survival analysis of each type of leukaemia was completed using multiple Cox regression model. **Results:** A total of 334 cases were identified, only 283 patients received treatment at

Presented by Assoc. Prof. Dr. Norsarwany bt Mohamad



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Division of Research & Innovation, School of Medical Sciences

MONTHLY RESEARCH PRESENTATION

Thursday
Feb. 23, 2023
0810-0910

WEBINAR NUMBER **2516 513 5198** PASSWORD **mrpfeb2023**

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Presenter 1



END Epilepsy

DR. SANIAH BINTI ABDUL HALIM
(Dept. of Internal Medicine)

Presenter 2



The Effect of Quranic Rhythm Therapy for Tinnitus Patients

DR. NIK ADILAH BINTI NIK OTHMAN
(Dept. of Otorhinolaryngology)

Chairperson



ASSOC. PROF. DR. TUAN HAIRULNIZAM
BIN TUAN KAMAUZAMAN
(Dept. of Emergency Medicine)



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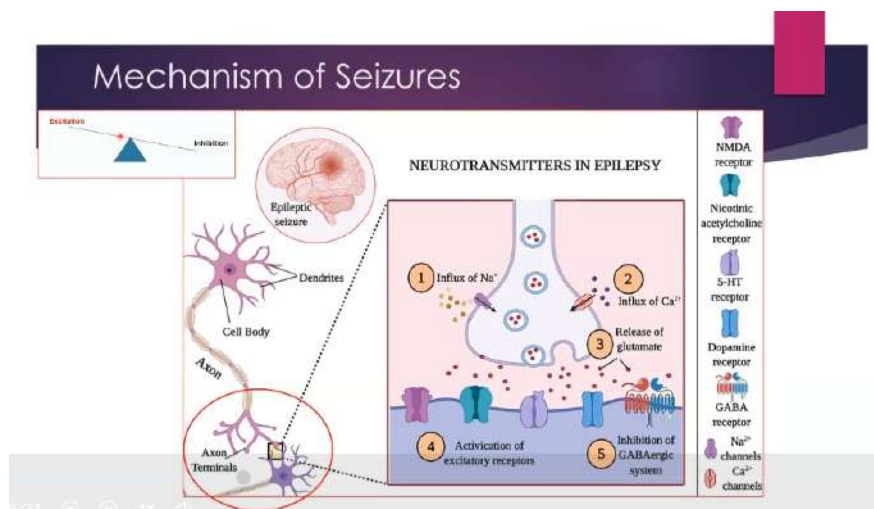
END Epilepsy: Therapeutic Strategies for Epilepsy Treatment

Epilepsy affects over 50 million world's population. The prevalence of lifetime epilepsy in Malaysia is 7.8 per 1000 persons. The field of research in epilepsy has expanded tremendously over the past few years. In 2017, the International League Against Epilepsy (ILAE 2017) published a new definition and classification of seizures and epilepsy. All research on epilepsy must use this new definition and classification when reporting the baseline characteristic of the patients. Seizures may arise locally or can spread to both cerebral hemispheres. Epilepsy types usually follow the seizure type and the underlying cause of epilepsy must be defined for each case.

70% of epilepsy patients can attain remission with antiseizure medications. Current treatment in epilepsy using anti-seizure medications is following the concept of precision therapy. Recent findings of various genetic abnormalities in Epilepsy help researchers to study the specific drugs that can stop the seizure by acting on the specific ion channels or receptors.

Understanding the mechanism of seizures which includes an imbalance between the neuronal inhibitory and excitatory pathways helps researchers to identify the pathological sites and to investigate new drugs in order to stop the seizures and cure epilepsy. 30% of epilepsy patients are resistant to antiseizure medications.

New technologies such as neurostimulation and epilepsy surgery reduce the seizure frequency by 50-70%. Various progress in epilepsy research has been made over the recent years in looking for the cause of epileptogenesis, identifying biomarkers, investigating new drugs, and precision therapy as well as pre-epilepsy surgery evaluation. Epilepsy can be cured if the patient received the correct and precise therapy.

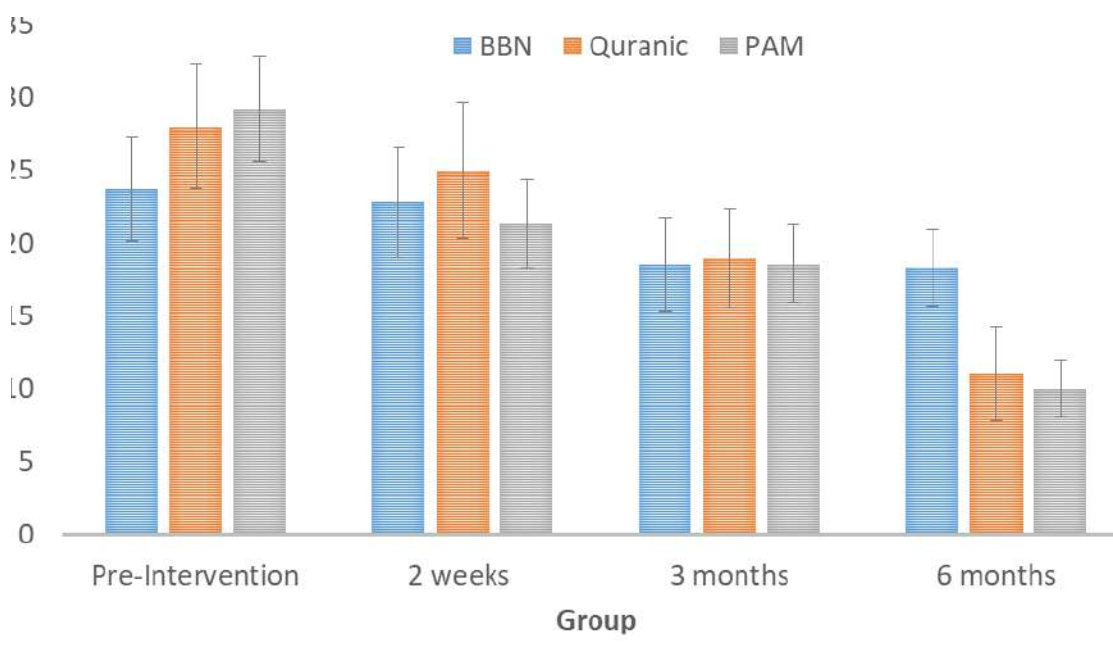


Presented by Dr. Sanihah binti Abdul Halim

The Effect of Quranic Rhythm Therapy for Tinnitus Sufferers

Tinnitus is derived from Latin word tinnire, meaning “to ring” or “ringing”. It is defined as perception of internal sound in one or both ears or in the head, with no external stimuli. Tinnitus sound varies, it can be ringing, whistling, hissing, or roaring. It is not a disease but a symptom. It affects 10-15% of adult population, and in about 10%, tinnitus becomes chronic and 0.5% are severely affected. In the national survey in 2005 by MOH, prevalence of tinnitus in Malaysia was 26.4%. Tinnitus often is associated with hearing deficits but there are also cases of tinnitus among normal-hearing people. Currently, there is no cure for tinnitus but there are some options to reduce its perception and commonly used in combination.

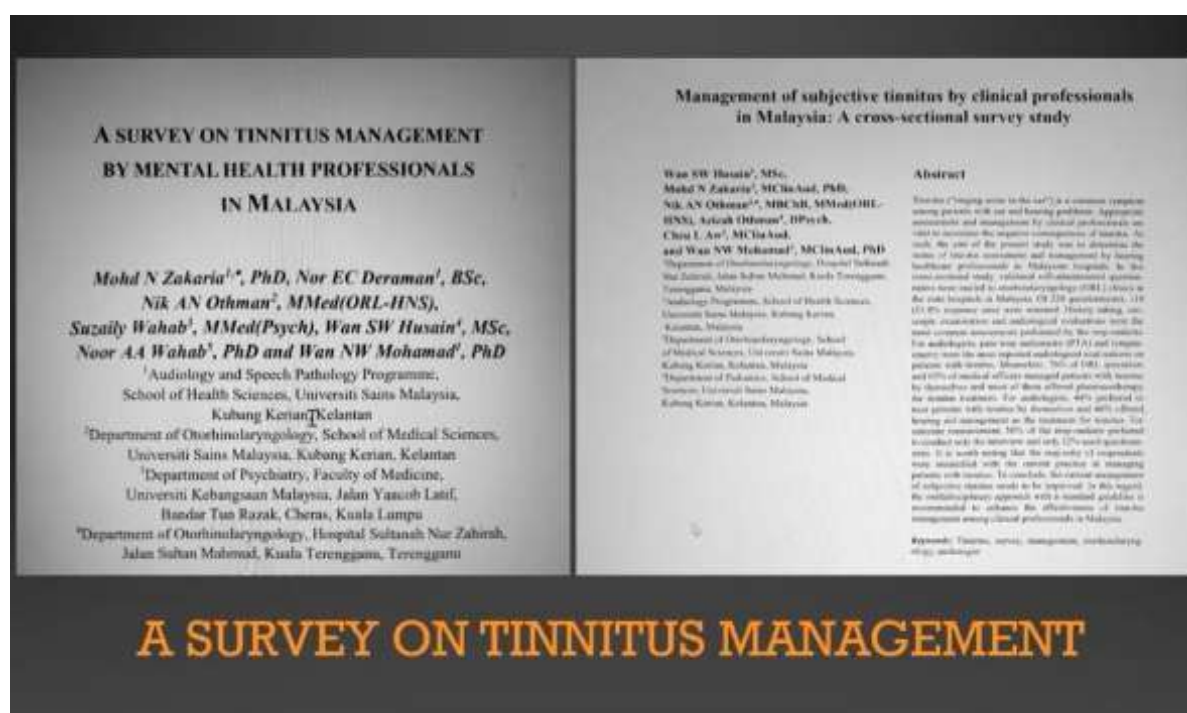
These treatments include hearing aids, counseling, sound therapy, sound generators, cochlear implants, antidepressants, anti-anxiety drugs, and other medications. The use of sound therapies is useful for normal or near normal hearing individuals. Sound therapy focuses on promoting habituation, and induce states of relaxation. The use of Quran rhythmic tone or recitation in the treatment of psychological problems has provided proof that the use of either Quran rhythmic tone or recitation may be effective in modulating the psychological and annoyance effects of tinnitus to the sufferers. With the 2 years grant from the Exploratory research grant scheme (ERGS) from Ministry of Higher Education (MOHE), a study on the effect of Quranic rhythm therapy on tinnitus patients was carried out. Phase 1 was a retrospective study on the tinnitus profile and characteristics of patients that attended the Tinnitus Clinic in Hospital USM. Phase 2 was on the development and validation of Psycho-audiological Module (PAM) to treat tinnitus patients.



This was a part of the MSc student's research. The content of PAM was found to be valid by professionals (CVI of 0.9). Content, language, materials, and treatment period of PAM were found to be good as reported by tinnitus patients. Phase 3 was on developing the novel sound therapy using Quranic rhythm. The sounds will be spectrally modified to enhance its effectiveness using the Sound Forge software. And the later part of phase 3 was the main part of the study.

Three groups of patients were assigned to either conventional therapy using broadband noise (BBN), PAM or customized Quranic therapy. The therapy effectiveness was measured at 2 weeks, 3 months and 6 months post-intervention using Borang Evaluasi Soal selidik Tinnitus (BEST) and tinnitus audiometry. Results showed that all types of therapies were effective in reducing tinnitus severity. Rapid improvements were seen in PAM (2 weeks post-intervention). At 6 months post-intervention, Quranic therapy was equally effective as PAM, and both outperformed BBN.

In conclusion, although tinnitus has no known cure, but we do have options to alleviate the symptom and benefit our patients. USM Tinnitus clinic is one of the first in Malaysia to cater specific for tinnitus patients and we work together with the Tinnitus clinic in the Audiology Clinic in PPSK. We hope to expand our collaboration with the neuroscience and psychological departments, for a better care for our patients.



Presented by Dr. Nik Adilah binti Nik Othman



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Division of Research & Innovation, School of Medical Sciences

MONTHLY RESEARCH PRESENTATION

Thursday
Mar. 30, 2023
0810-0910

WEBINAR NUMBER **2517 176 5524** PASSWORD **mrpmac2023**

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Presenter 1



Qualitative Assessment of Sexual and Reproductive Health and Rights and Access to Health Care Services among Women Living with HIV in Malaysia

ASSOC. PROF. DR. ZAHARAH SULAIMAN
(Women's Health Development Unit [WHDU])

Presenter 2



Down Regulated Expression Levels of miR-27b and miR-451a as Potential Biomarkers for TNBC patients

DR. AHMAD AIZAT BIN ABDUL AZIZ
(Human Genome Centre)

Chairperson



PROF. DR. CHAN YEAN YEAN
(Dept. of Microbiology and Parasitology)



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Qualitative Assessment of Sexual and Reproductive Health and Rights and Access to Health Care Services Among Women Living with HIV Within the Context of Prevention of Mother To Child Transmission of HIV in Malaysia

In October 2018, Malaysia was awarded the validation certificate for elimination of mother-to-child transmission (EMTCT) of HIV and syphilis, making it the first country in the World Health Organization (WHO) Western Pacific Region to achieve such status. The validation strongly recommended that Malaysia make sexual and reproductive health and rights of women living with HIV a crucial component in the HIV response. Women living with HIV are central to an effective HIV response. Although achieving the validation of EMTCT is a laudable accomplishment, maintaining this status is even more important for Malaysia.

The Global Validation Advisory Committee (GVAC) for EMTCT has made several recommendations, including for Malaysia to undertake an independent assessment of current practices concerning sexual and reproductive health and rights of women living with HIV in the context of prevention of mother-to-child transmission (PMTCT). GVAC has proposed to the Ministry of Health that GVAC will make a visit to learn the progress made on human rights and community engagement issues before the maintenance review of EMTCT validation.



The Global Validation Advisory Committee (GVAC) recommendations - to undertake an independent assessment regional multi-stakeholder advisory committee - All progress - from proposal - presented, discussed and endorsed by the committee

BACKGROUND

TheStar Malaysia feted for eliminating mother-to-child HIV and syphilis transmission

Malaysia feted for eliminating mother-to-child HIV and syphilis transmission

By LOH FOON FONG

NATION

Monday, 08 Oct 2018
9:31 AM MYT



Between July and October 2021, a nationwide assessment exploring the development of EMTCT programmes, with particular focus on sexual and reproductive health and rights and access to healthcare services among women living with HIV since 2018, was carried out by a research team from the School of Medical Sciences, Universiti Sains Malaysia. Implementation of the project was facilitated by community research supporters working with local community and civil society organizations. Using qualitative enquiries, the project assessed the lived experiences and views of women living with HIV and perspectives of healthcare providers on access to healthcare services, sexual and reproductive health and rights, and stigma and discrimination in healthcare settings.

Qualitative approaches were used to explore research objectives. The study used focus group discussions and in-depth interviews to reveal patterns of lived experiences and views of women living with HIV in the context of the PMTCT programme. Due to restrictions imposed by the COVID-19 pandemic, the Zoom application was used to bring together researchers and participants. This allowed the research project to be carried out nationally within a limited timeframe, capturing as many diverse voices as possible.

To portray a more recent and ongoing practice that has taken place since the validation of EMTCT, three categories of women living with HIV were included in the study: general, antenatal and postnatal women who are using healthcare services or who have done so since January 2018. Experiences and views were also sought from key stakeholders, including doctors, nurses and counsellors involved in providing services to women living with HIV from January 2018. A total of 11 in-depth interviews and 16 focus group discussions were conducted over 5 weeks, with 73 women living with HIV and 18 healthcare providers. The presentation will describe the main findings and way forward.

Link to the full report:

https://www.moh.gov.my/moh/resources/Penerbitan/Laporan/Umum/Qualitative_Assessment_of_SRHR_in_Malaysia_Final_MOH.pdf



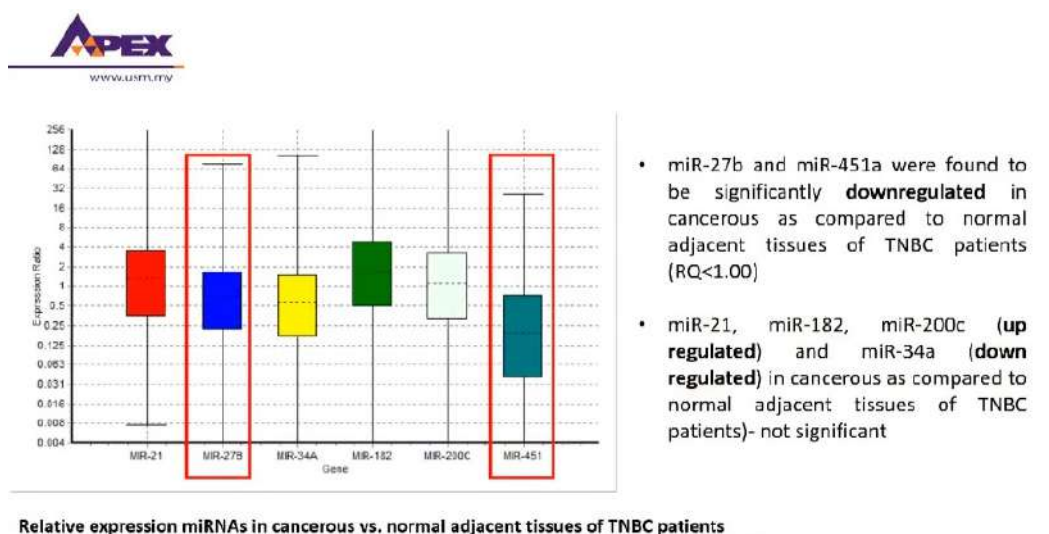
Presented by Assoc. Prof. Dr Zaharah Sulaiman

Down Regulated Expression Levels of miR-27b and miR-451a as a Potential Biomarker for Triple Negative Breast Cancer Patients

TNBC is associated with poor prognosis, aggressive phenotype(s) of tumours, partial chemotherapy response, and lack of clinically proven therapies. Patients with TNBC undergo standard chemotherapy regimens, but early relapse is still very common in patients with TNBC. MicroRNAs (miRNAs) can target and modulate key genes that are involved in TNBC chemotherapy. Deregulated microRNA expression is highly involved in anti-cancer drug resistance phenotype and thus, microRNAs tend to be promising candidates for prediction of chemotherapy response and recurrence.

This study aimed to investigate the expression levels of selected miRNAs (miR-21, miR-27b, miR-34a, miR-182, miR-200c and miR-451a) in cancerous and normal adjacent tissues of TNBC patients and to correlate with the clinicopathological data. Total RNA was isolated, transcribed, and pre-amplified from the cancerous and adjacent non-cancerous tissues of FFPE samples from 41 TNBC patients. The expression levels of miRNAs were quantified and normalised by adjacent normal tissues by using qRT-PCR.

Out of six miRNAs studied, the relative expression of miR-27b and miR-451 were found to be significantly lower in cancerous as compared to normal adjacent tissues of TNBC patients. In addition, a significant down regulation of miR-451a was also observed in infiltrating ductal carcinoma subtype, stages I and II, in both grade II and III, premenopausal and postmenopausal as well as in those with positive axillary lymph node metastases. The results suggest the possible utilization of miR-27b and miR-451a expression levels as potential predictive risk markers for TNBC patients undergoing chemotherapy.



Presented by Dr Ahmad Aizat Abdul Aziz



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WEBINAR NUMBER **2511 932 1765** PASSWORD **mrpmay2023**

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Presenter 1



Microbe Recruitment System (MRS)

EN. MUHAMMAD NASHRUL FARHAN BIN SAMSUDIN
(Department of Microbiology and Parasitology)

Presenter 2



SimLearningSpace (SLACE): Sistem Pengurusan Simulasi Bagi Pendidikan Perubatan

ASSOC. PROF. DR. TUAN HAIRULNIZAM B. TUAN KAMAUZAMAN
(Department of Emergency Medicine)

Presenter 3



Virtual Anatomy Museum

ASSOC. PROF. DR. ZUL IZHAR BIN MOHD ISMAIL
(Department of Anatomy)

Chairperson

Assoc. Prof. Dr. Rafidah Hanim Binti Shomiad @ Shueb
(Department of Microbiology and Parasitology)



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MICROBE RECRUITMENT SYSTEM (MRS)

Microbe Recruitment System (MRS) adalah sebuah sistem yang dibangunkan oleh Jabatan Mikrobiologi dan Parasitologi Perubatan dengan kerjasama Pusat Pengetahuan Komunikasi dan Teknologi (PPKT) dalam usaha memudahkan pensyarah-pensyarah mendapatkan pelajar pasca-siswazah atau pembantu penyelidik.

Sistem ini dibangunkan kerana terdapat beberapa kekangan dalam mencari pelajar yang berminat dalam menyambung pengajian. Antara masalah dihadapi ialah liputan iklan pencarian pasca-siswazah yang terhad, KPI para pensyarah dalam penerbitan tidak tercapai kerana penyelidikan tertangguh akibat ketiadaan pelajar.

Maka, ketercapaian sistem ini di laman web Pusat Pengajian Sains Perubatan (PPSP) memudahkan pelajar dalam negara dan luar negara yang berminat untuk memohonnya. Dengan sistem ini, dapat memudahkan pelajar mengisi maklumat dan pensyarah boleh terus menilai dan memberi maklumbalas secara atas talian sahaja. Pensyarah akan log masuk dengan menggunakan ID Campusonline@USM lalu memasukkan tajuk penyelidikan, syarat akademik, tempoh masa dan beberapa maklumat lain dalam sistem ini. Maklumat ini akan dipaparkan dalam sistem tersebut lalu memudahkan pelajar-pelajar untuk melihat senarai iklan penyelidikan yang ditawarkan. Pensyarah juga boleh mengemaskini iklan tersebut dari semasa ke semasa jika terdapat keperluan atau memadam iklan tersebut.

Selepas proses pengiklanan, pelajar yang berminat dengan tajuk penyelidikan tersebut akan mengisi maklumat mereka dan memuat naik curricular vitae (CV). Apabila pelajar selesai menghantar maklumat diri mereka, satu emel rasmi akan dihantar ke peti mel pensyarah, memberi notifikasi secara langsung bahawa ada pelajar berminat dengan iklan penyelidikan mereka. Pensyarah boleh mengakses sistem ini semula untuk melihat maklumat calon yang memohon dan memuat turun CV pelajar tersebut untuk dinilai. Sekiranya pensyarah berminat, pensyarah boleh menghubungi mereka.

Berdasarkan dapatan kaji selidik pengguna sistem MRS ini, didapati bahawa para pensyarah memberi respons positif kerana MRS mesra pengguna dan sesuai digunakan tanpa mengira masa. Impak projek ini dijangka akan meningkatkan produktiviti kerja para pensyarah kerana mempercepatkan kerja penyelidikan dalam mencari pelajar. Pada masa akan datang, dicadangkan keterlihatan MRS juga akan dibuka secara meluas kepada jabatan-jabatan lain dan lebih menyeluruh dalam Universiti Sains Malaysia (USM).

Presented by En. Muhammad Nasrul Farhan b Samsudin

SimLearningSpace (SLACE): Sistem Pengurusan Simulasi Bagi Pendidikan Perubatan

Simulation-based education (SBE) adalah satu kaedah mencapai objektif pendidikan perubatan (PP). Pelajar dapat menguji teori dipelajari dalam suasana selamat, membolehkan kesilapan dibuat dalam praktikal tanpa memberi kesan buruk kepada pesakit. Pelajar dapat mengimbas senario dialami dibantu oleh debriefing oleh pelatih.

SimLearningSpace adalah berdasarkan experiential learning dengan prinsip: (1) penglibatan pelajar dalam pembelajaran termasuk menyediakan maklumbalas, (2) pelajar mempunyai latarbelakang pengalaman, (3) pembelajaran adalah satu proses kitaran pratikal dan refleksi, serta menguji idea, (4) interaksi pelajar-persekitaran, (5) pembelajaran melibatkan perasaan, pemikiran, persepsi dan tingkah-laku, dan (6) pembelajaran berdasarkan falsafah constructivist.

Sim LearningSpace (SLACE) bertujuan untuk streamline proses pengajaran dan memberikan pengalaman simulasi aras tinggi (immersive) dalam PP bagi pelajar. Moto projek SLACE adalah "Premium education with medical education". Projek ini bertitik tolak daripada beberapa masalah (pain-points) latihan simulasi di Jabatan Perubatan Kecemasan: (1) manikin sedia ada adalah berkeupayaan low-fidelity dan tidak memberi tahap realism tinggi, sistem pengurusan data pelajar yang tidak efektif, (2) ruang dan infrastruktur hubungan audio dan visual tidak ada pengasingan antara ruang simulasi, kawalan dan debriefing dan (3) kaedah debriefing yang tidak berkesan.

Tiga nilai tambah utama dalam projek ini: (1) penggunaan manikin high fidelity serta menambah baik realism simulasi (2) mengubahsuai ruang agar dua ruang simulasi, ruang kawalan, auditorium dan ruang dua bilik tutorial untuk debriefing dapat diasingkan dan dihubungkan dengan sistem audio dan visual secara realtime (3) penambahbaikan pengurusan data pelajar, pengurusan modul pengajaran, hasil debriefing serta hasil ujian.



Gambarajah 1: Dua bilik simulasi membolehkan dua kumpulan menjalankan latihan serentak

Sisitem modular projek SLACE melibatkan elemen-elemen sekuriti, perjadualan latihan, event management, AV 2-way communication, recording, playback/live streaming, muat turun video dan log latihan.

Setiap pengguna SLACE akan melalui proses berikut dimana pelajar perlu mendaftar dahulu dalam sistem latihan dimana mereka akan memilih modul latihan dan SimTech akan memperuntukkan masa dan tarikh latihan bersama bahan bacaan dan kuiz yg perlu sekiranya ada. Pada masa latihan, Sim Tech akan membuat taklimat objektif latihan simulasi dan para pelajar akan dibahagikan kepada kumpulan-kumpulan kecil untuk sesi simulasi (3-4 pelajar setiap kumpulan) akan menjalani simulasi pada setiap masa). Pelajar dalam kumpulan lain akan berada di bilik debriefing dan boleh menonton sesi simulasi rakan mereka melalui live streaming (kumpulan besar akan live streaming dari auditorium). Setelah semua kumpulan selesai menjalani simulasi mereka akan berkumpul di bilik debriefing untuk sesi debriefing bersama Sim Tech.

Para pelajar memberikan maklumbalas yang positif berkenaan keberkesanan pembelajaran sebagaimana dikur dalam skala "Satisfaction With Simulation Experience Scale". SLACE juga mempunyai nilai komersil yang tinggi antaranya sebagai pusat latihan Advanced Cardiac life Support dan Basic Life Support untuk kakitangan hospital swasta, hospital kerajaan dan paramedik industri oil and gas. Projek ini telah mendapat tempat kedua dalam Pertandingan Kualiti Pusat Pengajian Sains Perubatan USM 2023 dan tempat kedua dalam pertandingan Innovation in Teaching and Learning Competition 2023 (INTELEC 2023).



Gambarajah 2: Manikin high-fidelity CAE

Presented by Assoc. Prof. Dr Tuan Hairulnizam Tuan Kamauzaman

Virtual Anatomy Museum

The physical Museum of Anatomy, School of Medical Sciences, USM provides teaching and learning (T&L) materials to School of Medical Sciences students exclusively and the students in USM and the community in general. The T&L activity of Anatomy subject requires access to physical teaching materials. However, issues related to the inadequate number of anatomical models with high number of students, limited access time and crowding inside the museum have inspired the department to develop the Virtual Anatomy Museum (VAM).

The objective of the VAM is to develop a platform for virtual T&L materials with minimal cost possible for the use of medical students and outside community. Forty essential anatomical specimens that are frequently utilised in practical anatomy classes were chosen. Photos of the specimens from variety of angles were captured and uploaded to the Department of Anatomy Museum website.

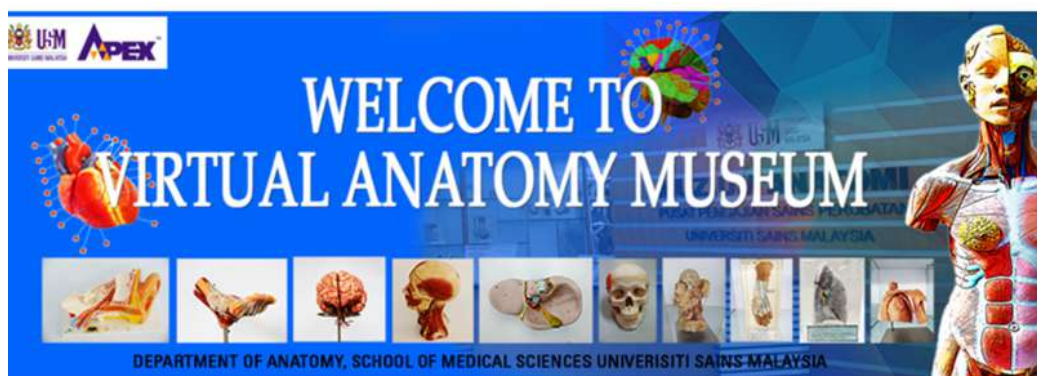
The links and plugins necessary to build the interactive sections of the VAM were uploaded together with images of the actual museum. The anatomical models were labelled, and photos with a brief description of the structures were included. Before being used for T&L purposes, the website's interactive and virtual features were tested for functionality and the information contained inside was verified as accurate.

By selecting the feedback menu on the website, students, anatomy lecturers, and the general public were asked to provide input. Analysis of the feedback showed that 93.9% of the users found that the experience of using the virtual anatomy museum was very enjoyable. Most respondents (79.2%) thought it was user friendly. About 90% of respondents agreed that the VAM is very valuable.

The majority of respondents (97.6%) agreed that the content of this portal is very relevant to their needs. Lastly, 99% of respondents agreed that the information contained in this portal is very beneficial. The innovative features of the VAM include sustainability, adaptability by other departments, relevant with the current and future trends in T&L, visibility at international level and very minimal cost and materials requirement.

The VAM has won several awards, namely the first place in the Quality Competition 2022 in the School of Medical Sciences, USM, Silver Medal in the International Conference of Teacher Education 2022, Gold Medal in the New Academia Learning Innovation 2022 in UTM and Gold Medal and Main Award in the Innovation in Teaching & Learning (INTELEC2023) in USM.

The unique and engaging features of the VAM have enabled the students and visitors to access and learn Anatomy subject without time and place barrier. The originality of the VAM has enabled the department to share anatomy knowledge with the academic and general communities, locally and internationally. The department has envisioned in the further enrichment and addition of high-end interactive features in the VAMt in order to create the VAM a top-notch virtual anatomy museum in the world.



[https://medic.usm.my/anatomy/museum/
virtual-anatomy-museum](https://medic.usm.my/anatomy/museum/virtual-anatomy-museum)



Presented by Assoc. Prof. Dr. Zul Izhar Mohd Ismail

Division of Research & Innovation, School of Medical Sci

MONTHLY RESEARCH PRESENTATION

Thursday
July 6, 2023
0810-0910



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Presenter 1



Reimagining Anatomy Core Competency: From Ancient to Avant-garde

ASSOC. PROF. DR. SITI NURMA HANIM BT HADIE@HAJI
(Department of Anatomy)

Presenter 2



Role of Heterotrigena Itama Bee Bread on Obesity-Induced Male Reproductive Impairment in High-Fat Diet Obese Rat Model

DR. AINUL BAHYAH BINTI ABU BAKAR
(Department of Physiology)

Chairperson

ASSOC. PROF. DR.
WAN MOHD ZAHIRUDDIN
BIN WAN MOHAMMAD

(Department of Community Medicine)



Reimagining Anatomy Core Competency: From Ancient to Avant-garde

Anatomy is the oldest medical subject in the world, and anatomy competency has evolved significantly from ancient to modern age period. Given that anatomy knowledge is crucial for safe clinical practice, there is a need explore the core elements of anatomy competencies in modern medical curriculum

This two-phased multimodal study comprises two phases. The first (Consulting) phase explored the competency elements through standard referral documents, a scoping review of published literatures, and stakeholders' engagement involving 200 medical students and doctors—via in-depth interview and focus group discussion. The second (Profiling) phase examined the importance of the identified elements in a workshop involving anatomy lecturers and clinicians from 11 public medical schools in Malaysia.

This study unearthed four cognitive (i.e. mastery of anatomy core knowledge; basic and clinical application of anatomy knowledge; integration of anatomy concept with basic sciences and clinical input; and translation of anatomy knowledge); four psychomotor (i.e., identification of anatomical structures; three-dimensional visualisation of anatomical structures; kinaesthetic appreciation of anatomical structures; and performance of anatomy-related clinical skills); five affective (i.e., valuing the importance of clinical application of anatomy; valuing learning activities through commitment, and perseverance; organising professional ethical standards in anatomy education; organising learning behaviours for collaborative learning; internalising social and emotional values related to body donation and dissection-based environment), and three intrapersonal skills (i.e., self-regulated learning; digital skill; and self-reflection and introspection skills) competencies. Each competency outlines functional elements that were rated to be important for safe clinical practice. The generated anatomy core competency can be used to design a lean competency-driven anatomy curriculum.



Presented by Assoc. Prof. Dr. Siti Nurma Hanim Bt Hadie@Haji

Role of *Heterotrigona itama* Bee Bread on Obesity-induced Male Reproductive Impairment in High-fat Diet Obese Rat Model

Obesity is a metabolic disease caused by a combination of factors such as excessive food intake, lack of physical activity, endocrine disorders, and genetic susceptibility. The prevalence of obesity has reached an alarming rate in many developing countries including Malaysia where National Health and Morbidity Surveys in 2019 reported that 30.4% of Malaysian were overweight while 19.4% were obese. Obesity is reported to cause testicular oxidative stress, decreased steroidogenesis, increased testicular inflammation and apoptosis, and decreased germ cell proliferation in obese rats.

Bee bread is a fermented bee pollen mixed with honey and bee digestive enzymes. It has high protein, phenolic, and flavonoid contents, and has biological properties such as antioxidant, antimicrobial, anti-inflammatory, anticancer, immunomodulatory, and anti-apoptotic properties. Bee bread was traditionally consumed for general well-being and fertility enhancement.

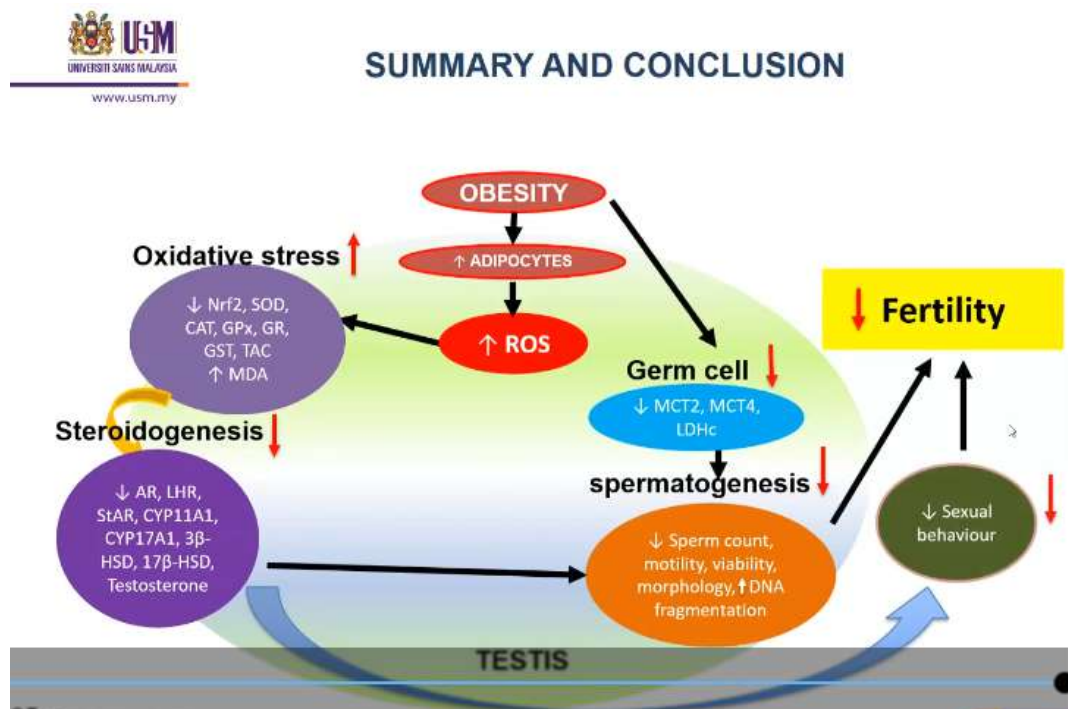
However, the role of *Heterotrigona itama* bee bread on male reproductive impairment in obesity has not been reported by other researchers. It is unknown whether bee bread may attenuate testicular oxidative stress, and improve steroidogenesis, spermatogenesis, and fertility potential in obesity state. Therefore, this study aimed to determine the role of *Heterotrigona itama* bee bread on reproductive impairment in male rats fed with high-fat diet (HFD).

Thirty-two adult male Sprague Dawley rats (250-300 g) were randomised into four groups (n=8/group), namely normal control (NC), HFD, HFD plus bee bread (HFD+B) and HFD plus an anti-obesity drug orlistat (HFD+O) groups. Bee bread (0.5g/kg/day) and orlistat (10 mg/kg/day) were suspended in distilled water and given by oral gavage for 12 weeks. During the tenth week, each male rat cohabited with a fertile female rat to assess male sexual behaviour and reproductive performance. At the end of 12 weeks, male rats were anaesthetised, and blood, as well as the reproductive organs, were removed for the determination of reproductive functions.



Results showed that bee bread significantly improved the anthropometrical parameters and lipid profile in rats fed with HFD. Bee bread also significantly ameliorated testicular oxidative stress, enhanced sperm count, viability, and motility, and reduced abnormal sperm morphology as well as fragmented nDNA. In addition, bee bread significantly increased the levels of reproductive hormones thereby increasing the number of rats with improved intromission and ejaculation as well as mating and fertility indices.

In conclusion, *Heterotrigona itama* bee bread (0.5 g/kg b.w./day) in rats fed with HFD for 12 weeks decreased oxidative stress, improved testicular lactate utilisation, thus improved the negative effects of obesity on steroidogenesis, spermatogenesis, mating behaviour and reproductive performance. The present study suggests that bee bread offers some protective effects on the male reproductive system in obesity state due to the presence of phenolic compounds such as phenolic acids (2 hydroxycinnamic acids, trans 3-hydroxycinnamic acid, trans ferulic acids) and flavonoids (caffeic acid, apigenin, kaempferol, quercetin, mangiferin), which have antioxidant and anti-inflammatory properties.



Presented by Dr Ainul Bahiyah Abu Bakar



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Division of Research & Innovation, School of Medical Sciences

MONTHLY RESEARCH PRESENTATION

Thursday
July 27, 2023
0810-0910

WEBINAR NUMBER **2517 153 2941** PASSWORD **mrpjuly2023**

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Presenter 1



Myocardial Mapping In Non-Ischaemic Cardiomyopathy

ASSOC. PROF. DR. KHAIRIL AMIR BIN SAYUTI
(Department of Radiology)

Presenter 2



Moonshot Approach in Transformation Program: A Case Study of National Arts Science Prize 2022 Champion

DR. MOHD ZULKIFLI BIN MUSTAFA
(Department of Neurosciences)

Chairperson



DR. LIDAWANI BINTI LAMBUK

Post-Doctoral Fellow
(Department of Immunology)



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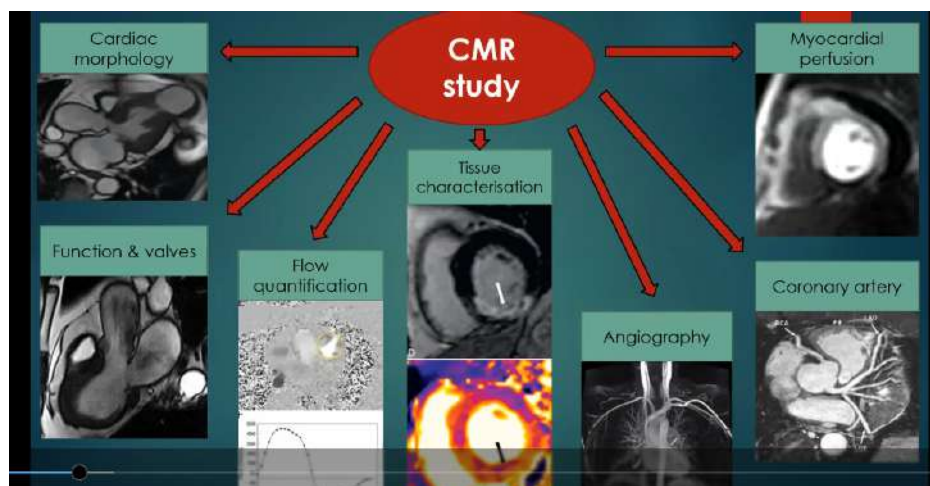
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Myocardial Mapping in Non-Ischaemic Cardiomyopathy

Cardiac MRI (CMR) is widely used in cardiovascular pathology. This includes ischaemic and non-ischaemic cardiomyopathy, valvular heart disease, vascular disease, and congenital heart defect. A major pathological process which occurs in cardiomyopathy is the development of myocardial fibrosis that influences treatment option, disease prognostication and monitoring. Myocardial fibrosis is divided into replacement and interstitial types. The latter is further divided into reactive and infiltrative types. The conventional CMR method in detecting myocardial fibrosis is the late gadolinium enhancement (LGE) phase.

This LGE technique requires intravenous contrast and is well established in ischaemic cardiomyopathy, particularly the myocardial infarction. However, there is a significant percentage of cases where LGE gives false negative result, especially in non-ischaemic cardiomyopathy (e.g. Anderson-Fabry disease, amyloidosis, myocarditis and dilated cardiomyopathy). This is mostly true in cases of diffuse myocardial fibrosis where there is absence of normal myocardium as reference; as well as in cases where the interstitial fibrosis is too microscopic to be visually detected by the LGE technique due to its limited spatial resolution.

Another conventional technique is Short Tau Inversion Recovery (STIR) that is to demonstrate myocardial oedema, a common associated finding in non-ischaemic cardiomyopathy. However, this sequence is prone to artefacts, gives false positive results and variability in interpretation. All these issues have paved the way to the development of myocardial parametric mapping, a newer and a more objective MR technique in detecting myocardial fibrosis and oedema despite the negative or inconclusive findings through the conventional approach.

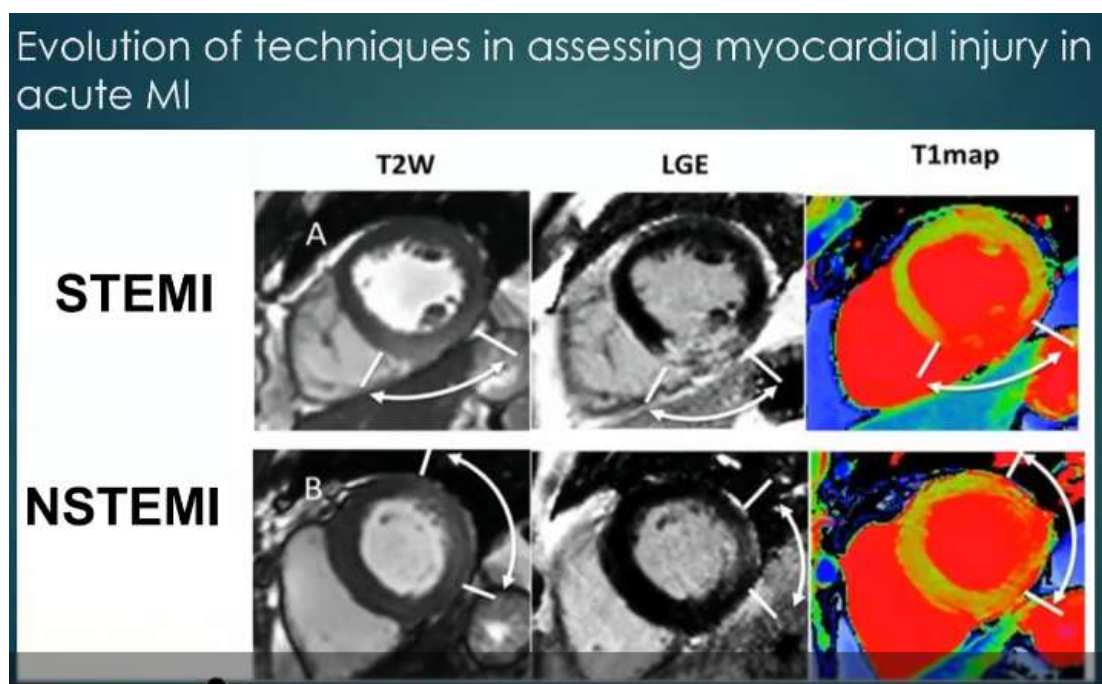


This quantitative method requires simple image acquisition under a single breath-hold. The native T1 and T2 relaxation times of the myocardial tissues are measured using a post-processing software without the need for intravenous contrast.

The extracellular volume fraction (ECV) calculation requires intravenous contrast, T1 relaxation time of left ventricular blood and haematocrit result. All the values obtained are tissue-specific, more sensitive than the LGE/STIR sequences with no significant intra- or inter-reader variability. The clinical application of myocardial map has been widely proven internationally, especially for disease monitoring and response to treatment.

However, the normal values vary according to population/race, parameters of the sequence, magnetic strength, and model of MRI scanner. Therefore, the international normal range is not fully applicable to our local setting and can potentially lead to inaccurate diagnosis.

The study is aimed at establishing the normal mean values and confidence intervals of native T1 and T2 relaxation times as well as the ECV among the healthy volunteers using the 3.0Tesla MRI scanner at Hospital USM. These values will be compared between the myocardial segments and different types of coils (cardiac and torso). It is hoped that this will assist the radiologist in making a more accurate diagnosis, hence the best management strategy for the patient.



Presented by Assoc. Prof. Dr. Khairil Amir Sayuti

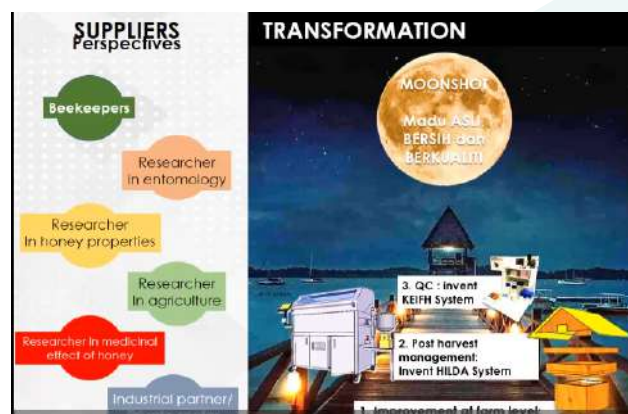
Moonshot Approach in Transformation Program: A Case Study of National Artscience Prize 2022

Artscience is an interdisciplinary approach that integrates elements of both art and science. It explores the intersection and synergy between these two seemingly distinct fields, fostering creativity, innovation, and new ways of understanding the world. In essence, artscience seeks to combine the analytical rigor of scientific inquiry with the expressive and interpretive qualities of artistic practice. It often involves collaboration between artists, scientists, researchers, and practitioners from various disciplines to address complex problems, communicate scientific concepts, and inspire new perspectives.

Dr. Mohd Zulkifli Mustafa, along with a team of academics from Universiti Sains Malaysia (USM), won the ASM ArtScience Prize 2022 with their groundbreaking project, "The Crown". Over a decade in the making, this project revolutionizes beekeeping by integrating Internet of Things (IoT) technology into a bee house. "The Crown" is more than just a beehive; it's a smart structure crafted from local timber and IoT components. Farmers can now monitor hive conditions like temperature and humidity remotely via their smartphones. Additionally, a QR code system facilitates tracking hive locations, promoting environmental stewardship while enabling income generation through honey production.

In this talk, Dr. Zulkifli illustrates how the Moonshot Approach guided their transformation program, driving them beyond conventional boundaries towards pioneering solutions at the intersection of art and science. Through clear and concise examples, he highlights the key principles underlying their approach, including bold vision, interdisciplinary collaboration, and relentless perseverance. Furthermore, the talk explores the tangible impact of embracing such strategy, not only in achieving their goal but also in fostering creativity, fostering collaboration, and inspiring future innovation. Drawing from their experience, Dr. Zulkifli offers practical insights and actionable takeaways for individuals and organizations seeking to embark on their own transformative journeys.

Presented by Dr. Zulkifli Mustafa





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Date: **Thursday August 24, 2023** *Time:* **081**

WEBINAR NUMBER **2514 956 1687** PASSWORD **mrpaug2023**

Presenter 1



**ASSOC. PROF. DR.
TENGKU ALINA
BINTI TENGKU ISMAIL**

*(Department of
Community Medicine)*

**Men and Health-Seeking Behaviour:
Findings from the State of Kelantan**



Presenter 2

**Effects of Intracameral Ranibizumab
in Experimental Trabeculectomy**

**ASSOC. PROF DR.
AZHANY BINTI
YAAKUB**



*(Department of
Ophthalmology
& Visual Science)*



Chairperson



DR. SURIANTI BINTI SUKERI
*(Department of
Community Medicine)*

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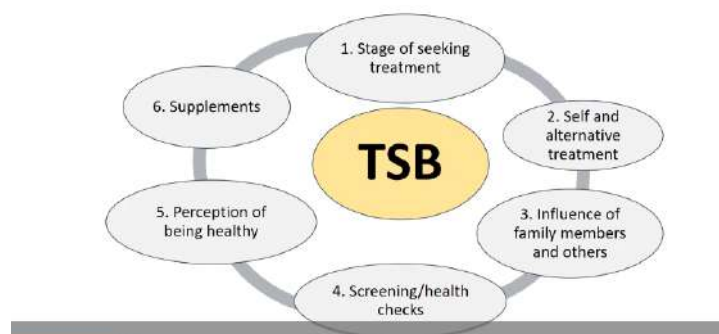
Men and health-seeking behaviour: Findings from the state of Kelantan

Men's health is defined as a state of complete physical, mental, and social well-being, as experienced by men, and not merely the absence of disease or infirmity. The issues related to men's health are not well understood as compared to the equally important health of women. One of them, the treatment seeking behaviour (TSB), is different among men.

This study aimed to determine the proportion of inappropriate treatment seeking behaviour and its associated factors among male civil servants in Kelantan, as well as to explore their experiences on treatment seeking behaviour. It involved a concurrent parallel mixed method design among male civil servants from six government agencies in Kelantan, from March 2018 – November 2019.

The quantitative study in Part 1 was conducted among 381 randomly selected participants using a translated Treatment Seeking Behaviour questionnaire. Simple and multiple logistic regression analysis was used. The qualitative study in Part 2 involved six focus group discussions (FGDs) with 42 participants. The FGDs were analysed using thematic analysis. The mean age of participants in quantitative study was 41 years old. The proportion of inappropriate treatment seeking behaviour was 64.6%. The significant variables for inappropriate treatment seeking behaviour and their interpretations were as followed: Non-Muslim and those with higher income had higher odds for inappropriate treatment seeking behaviour, while those who are married had lower odds.

Those who self-assessed their illness severity as average, compared to slight, had lower odds of inappropriate treatment seeking behaviour, while those with low information had higher odds. Those who perceived that they rarely or never received appropriate treatment from healthcare provider, had higher odds of inappropriate treatment seeking behaviour. Those who rarely or never accept illness when having symptoms, had higher odds of inappropriate treatment seeking behaviour.



Those who had low or very low perceived embarrassment on expressing illness to others, had lower odds of inappropriate treatment seeking behaviour (TSB). Those who perceived their job and responsibilities as much and somewhat barrier in seeking healthcare, as compared to those who perceived as very much, had lower odds of inappropriate treatment seeking behaviour. Compared to those who always have easy access to medications without prescription, those in other categories were less likely to have inappropriate treatment seeking behaviour.

Finally, those who perceived that affordability as much and somewhat determinant in seeking healthcare, compared to those who perceived as very much, had lower odds of inappropriate treatment seeking behaviour. For the qualitative study, six themes emerged: stage of seeking treatment; self and alternative treatment; influence of family members and others; screening/health checks; perception of being healthy; supplements.

The findings from the FGDs support and explain some of the associations reported from the logistic regression analysis in Part 1. As a conclusion, the treatment seeking behaviour among the study population was not adequate. Various factors influenced this behaviour. Improvement of health services for men should include a gender-sensitive approach, male-friendly, promoting evidence-based medicine, and potential use of the online platform.



Presented by Assoc. Prof. Dr. Tengku Alina Tengku Ismail

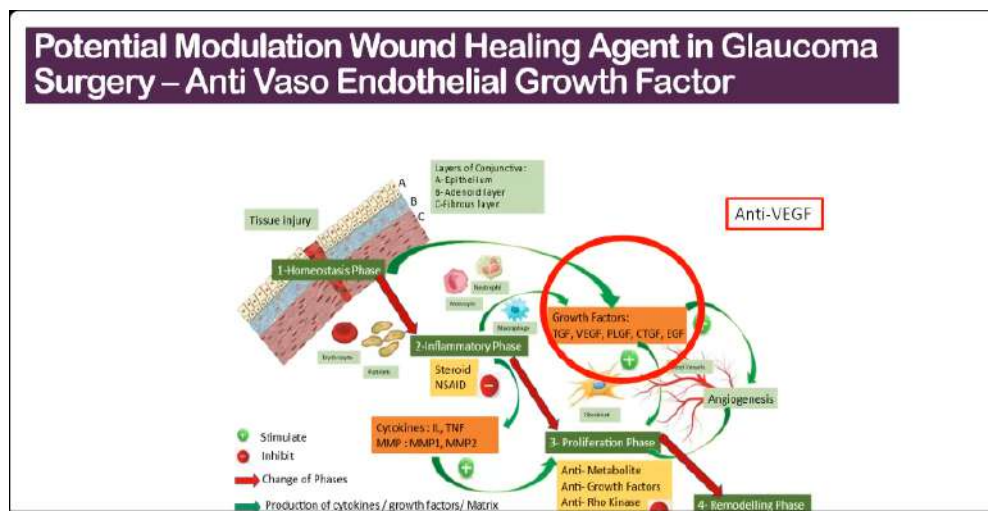
Effects of Intracameral Ranibizumab in Experimental Trabeculectomy

Post-surgical scarring is a known cause of trabeculectomy failure. The aim of this study was to investigate the effectiveness of ranibizumab as an adjuvant anti-scarring agent in experimental trabeculectomy.

Forty New Zealand white rabbits were randomised into four eye treatment groups: groups A (control), B (ranibizumab 0.5 mg/mL), C (mitomycin C [MMC] 0.4 mg/mL), and D (ranibizumab 0.5 mg/mL and MMC 0.4 mg/mL). Modified trabeculectomy was performed. Clinical parameters were assessed on post-operative days 1, 2, 3, 7, 14, and 21. Twenty rabbits were euthanised on day 7, and the other twenty were euthanised on day 21. Eye tissue samples were obtained from the rabbits and stained with haematoxylin and eosin (H&E).

All treatment groups showed a significant difference in IOP reduction compared with group A ($p < 0.05$). Groups C and D showed a significant difference in bleb status on days 7 ($p = 0.001$) and 21 ($p = 0.002$) relative to group A. H&E staining showed significantly low fibrotic activity ($p < 0.001$) in group C on both days and inflammatory cell grade in group B on day 7 ($p < 0.001$). The grade for new vessel formation was significantly low in groups B and D on day 7 ($p < 0.001$) and in group D on day 21 ($p = 0.007$).

Ranibizumab plays a role in reducing scarring, and a single application of the ranibizumab–MMC combination showed a moderate wound-modulating effect in the early post-operative phase.



Presented by Assoc. Prof. Dr. Azhany Yaakub

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Date: **Thursday September 21, 2023** Time: 08

WEBINAR NUMBER **2517 853 3906** PASSWORD **mrpsept2023**

Presenter 1



**DR. ROHIMAH
MOHAMUD**

(Department of
Immunology)

**A Novel Approach on Targeting
TNFR2 for Immunotherapeutics**

Presenter 2

**Partial Verification Bias Correction
in Diagnostic Accuracy Studies**

**DR. WAN
NOR ARIFIN
WAN MANSOR**



(Biostatistics
and Research
Methodology Unit)

Chairperson



**PROFESSOR DR.
KAMARUL IMRAN
BIN MUSA**

(Department of
Community Medicine)

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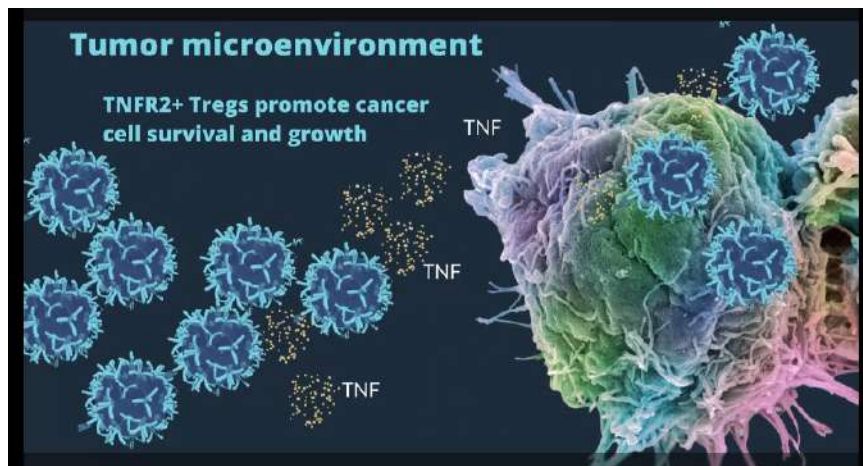
A Novel Approach on Targeting TNFR2 for Immunotherapeutics

The tumor necrosis factor (TNF) receptor type II (TNFR2) is found in diverse tumor cells and specific immune cells like regulatory T cells and myeloid-derived suppressor cells, playing a significant role within the tumor microenvironment. TNFR2 directly fuels the growth of certain tumor cells, activates immunosuppressive cells, and aids in immune evasion, highlighting its importance in cancer treatment as evidenced by existing research.

This presentation explores the activation mechanism and signaling role of TNFR2 within the tumor microenvironment, detailing its expression and function in various immune cells. It also evaluates the potential advantages and challenges of targeting TNFR2 in immunotherapy. Furthermore, it analyzes the potential obstacles in the clinical development and application of targeted anti-TNFR2 agonists and inhibitors.

Within the complex tumor microenvironment, TNFR2 exhibits a dual function that can be influenced by several factors. While TNFR2⁺ regulatory T cells dominate as immunosuppressive agents, TNFR2⁺ effector T cells benefit from TNF α /TNFR2 pathway activation. However, maintaining a balance between these contrasting functions is crucial.

For instance, studies have shown that high levels of TNFR2⁺ tumor-infiltrating lymphocytes (TILs) improve survival rates in triple-negative breast cancer (TNBC) patients, yet unfavorable levels of programmed cell death protein 1 (PD-1)⁺ TILs can counteract this effect. Interestingly, PD-1 expression may vary during T cell activation, suggesting that optimizing conditions could enhance the impact of PD-1⁺ TIL levels on TNFR2⁺ TILs. Hence, effective targeting of TNFR2 in therapy requires consideration of different tumor types and disease stages, necessitating a comprehensive assessment of TNFR2 function across various tumors in future studies.



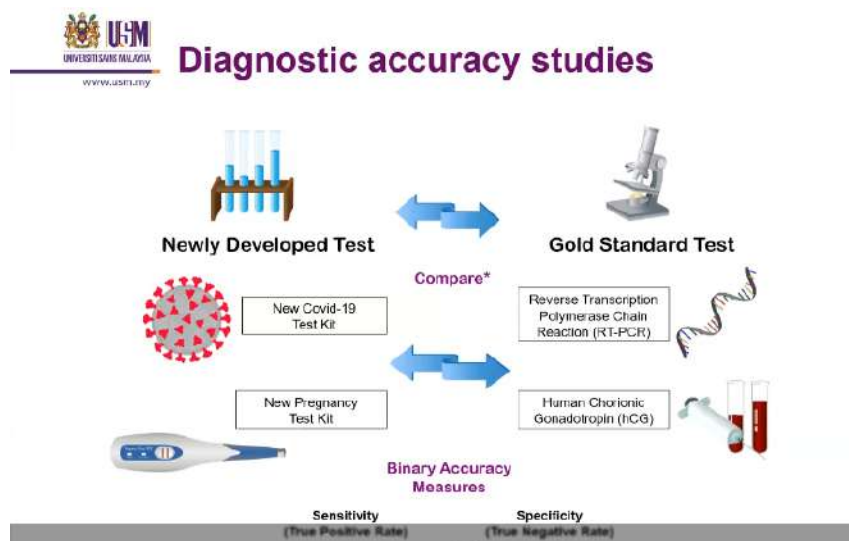
Presented by Dr. Rohimah Mohamud

Partial Verification Bias Correction in Diagnostic Accuracy Studies

Diagnostic tests are pivotal in medical care, necessitating thorough diagnostic performance evaluations. However, diagnostic accuracy performance measures, such as sensitivity and specificity, are often biased due to selective verification of the patients. This bias is known as partial verification bias (PVB). PVB is often unavoidable in medical research because verification by gold standard test is often costly, unethical, invasive or technically infeasible. PVB results in biased performance measures, premature implementation of flawed tests and invalid tests, and clinical errors.

While many methods for correcting PVB are available, they are not easily performed by researchers due to the complexity of the methods. To address this issue, the PVB correct package facilitates PVB correction within the R programming environment, enhancing accessibility for researchers. Moreover, it is freely available for all interested parties. Medical researchers are encouraged to identify PVB in previously conducted diagnostic accuracy studies and plan new diagnostic studies in view of PVB. Additionally, with the growing use of machine learning models in diagnostics, the same issues with PVB might affect their performance evaluations, making PVB correction imperative in this context.

In conclusion, with proper research planning that takes into account PVB, diagnostic performance of any new test can be accurately evaluated. Bias correction becomes more feasible when potential sources of bias are identified and documented, even if it is not possible to avoid the bias. The PVBcorrect R package is a valuable tool to help researchers in performing the correction.



Presented by Dr. Wan Nor Arifin Wan Mansor



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Date: **Thursday October 26, 2023** Time: **0810-0910**

WEBINAR NUMBER **2514 020 2510** PASSWORD **mrpoc12023**

Presenter 1



**DR. NIK NOR IZAH
NIK IBRAHIM**

(Department of
Pharmacology)

**Endothelial Microparticles as Potential
Biomarkers for Endothelial Dysfunction
in Hypercholesterolemia and Its
Correlation with Pulse Wave Analysis**

Presenter 2

**The Accuracy of Point of Care Test
Procalcitonin in Intensive Care Unit**

**ASSOC. PROF. DR.
MOHD ZULFAKAR
MAZLAN**



(Department of
Anaesthesiology and
Intensive Care)

Chairperson



**ASSOC. PROF. DR.
MUZAIMI MUSTAPHA**
(Department of Neurosciences)

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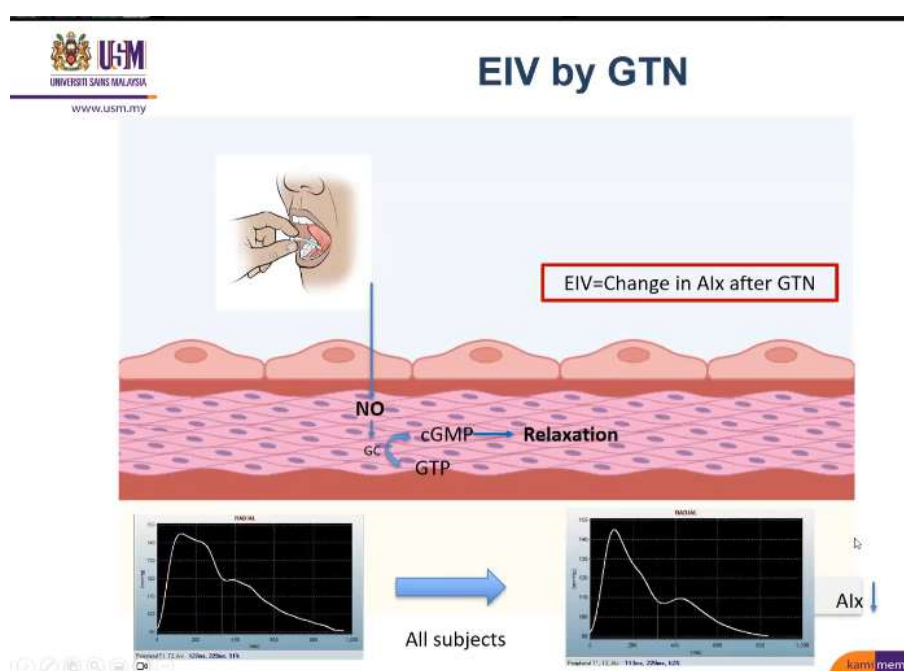
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Endothelial Microparticles as Potential Biomarkers for Endothelial Dysfunction in Hypercholesterolemia and Its Correlation with Pulse Wave Analysis

Endothelial dysfunction is defined as an impairment in nitric oxide (NO)- mediated vasodilation and has been shown to precede the development of atherosclerosis. Detecting it early may help in the prevention of atherosclerosis and cardiovascular disease (CVD). The current methods of detection assess NO-mediated dilation but may not be suitable for clinic set up as they are tedious and require the administrations of drugs to induce vasodilation.

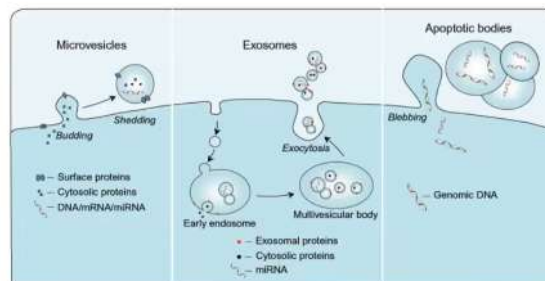
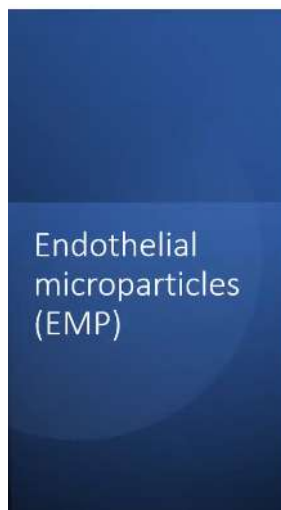
Endothelial microparticles (EMP) are particles measuring 0.1 -1.0 μm that are released from the endothelium during apoptosis or activation and has the potential to be used as biomarkers for endothelial dysfunction. The commonly studied EMP subtypes include CD31+/42-, CD144 and CD62e, with or without annexin V (AV). This study aimed to compare the levels of EMP in hypercholesterolemia model of endothelial dysfunction, and to correlate it with the method of assessing endothelial function using pulse wave analysis (PWA) via the parameter endothelium dependent vasodilation (EDV).

This was a cross-sectional study comparing 44 newly diagnosed hypercholesterolemia patients against 44 normal controls. EMP was isolated from the blood and determined using flow cytometry. EDV was assessed non-invasively using PWA in combination with NO-mediated vasodilation using inhaled salbutamol.



Absolute counts of all EMP subtypes were significantly elevated in hypercholesterolemia group compared with normal controls; CD31+/42-/AV+ (3.45 ± 4.74 count/ μl vs 1.33 ± 4.40 count/ μl ; $p=0.03$), CD144+/AV+ (7.37 ± 12.66 count/ μl vs 1.42 ± 1.71 count/ μl ; $p=0.003$) and CD62e+/AV+ (57.16 ± 56.22 count/ μl vs 20.78 ± 11.04 count/ μl ; $p<0.001$) There was a significant inverse moderate correlation between all circulating EMP subtypes and EDV; CD31+/42-/AV+ ($r = -0.36$, $p = 0.001$), CD144+/AV+ ($r = -0.37$, $p = 0.001$) and CD62e+/AV+ ($r = -0.35$, $p = 0.002$).

All EMPs were raised in patients with hypercholesterolemia, and they correlate with the established method of assessing endothelial function using PWA. The findings support EMPs are potential biomarkers for endothelial dysfunction particularly in patients with hypercholesterolemia.

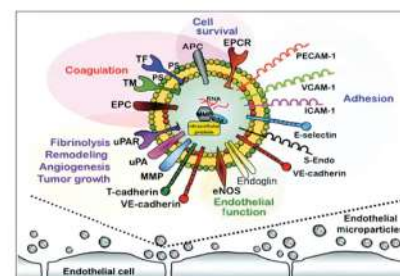


- Small vesicles (0.1-1.0 μm) released from endothelium in response to apoptosis or activation (Leite, 2020).



Endothelial microparticles (EMP)

- Commonly studied cell surface antigens (CD)
 - CD31+/42-
 - CD144
 - CD62e
 - Identified by specific fluorescent labelled antibodies
 - Phosphatidylserine (PS)
 - Identified by fluorescent labelled Annexin V (AV)
- Flow cytometry



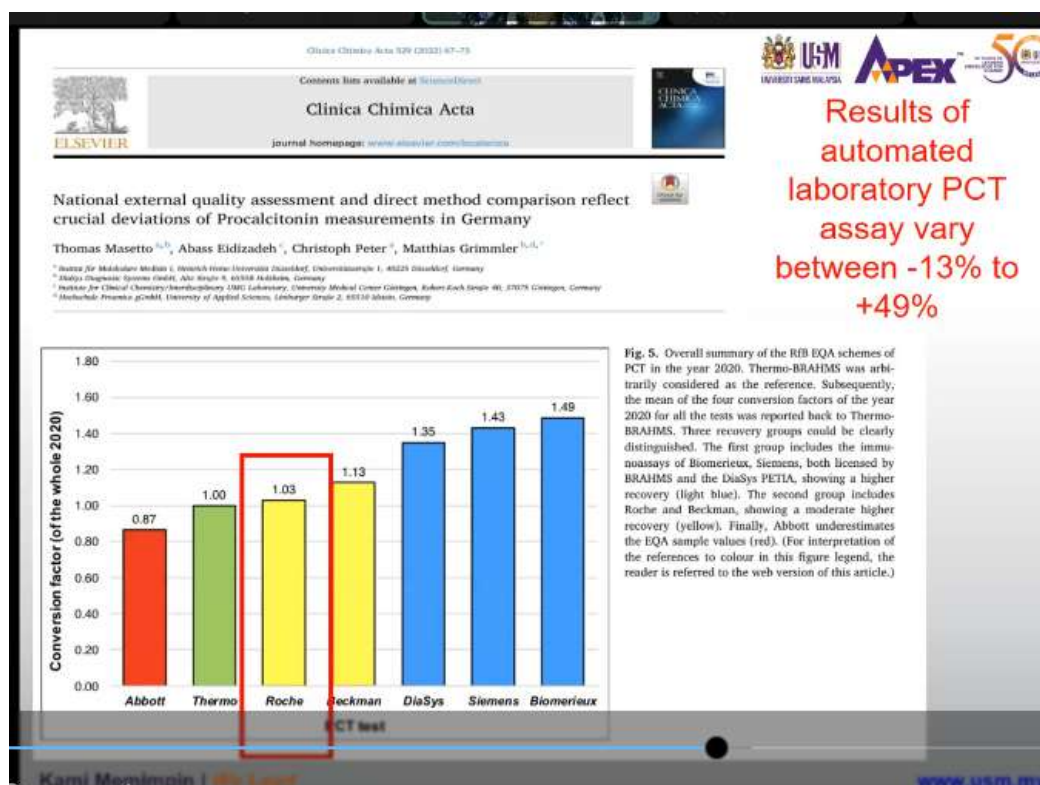
Presented by Dr. Nik Nor Izah Nik Ibrahim

The accuracy of POCT procalcitonin in ICU

The accuracy of a procalcitonin (PCT) test is typically assessed through sensitivity and specificity. A meta-analysis revealed that PCT's sensitivity and specificity range from 66% to 89% and 55% to 78%, respectively, for predicting bacteremia, suggesting its potential in predicting bacterial infections.

The accuracy of a PCT test can be influenced by factors like assay quality, test timing, and the specific clinical context. Additionally, the accuracy of a point-of-care test (POCT) PCT can vary based on the specific kit or assay used. This study aims to compare the accuracy, precision, and linearity of POCT PCT performed at the bedside in the intensive care unit (ICU) versus automated PCT performed in the laboratory.

Whole blood will be withdrawn from the in situ arterial line. Within 30 minutes, the collected blood will be tested using the POCT PCT. The remaining portion will be centrifuged to generate serum. The serum will undergo testing for PCT using both POCT and automated laboratory testing (Auto Lab PCT) on the Cobas e411. The POCT machine used is the Finecare meter Plus (FS-205).



Both whole blood and serum samples obtained through POCT will be compared with serum PCT results from the laboratory measured by Cobas e411. For precision assessment of POCT, two cut-off values (0.5 ng/ml and 2.5 ng/ml) will be used. A serum sample with values of 0.155 ng/ml and 82.76 ng/ml will be used to evaluate POCT Finecare's linearity through a six-sample dilution method.

A total of 40 PCT measurements were randomly sampled from ICU patients with sepsis in 2023. No significant differences were found between the mean of POCT (13.86, SD = 18.72) and Auto Lab PCT (13.77, SD= 19.65), $P = 0.918$. The linear relationship was strong (0.96, $P < 0.001$). The precision of POCT was 5.2% for a cut-off value of 0.5 ng/ml and 2.5% for a cut-off value of 2.5 ng/ml. Linearity results of POCT PCT were 0.99.

While a specific accuracy comparison between POCT and automated PCT testing wasn't directly addressed in the literature, these findings underscore the potential of POCT PCT testing by Finecare meter Plus (FS-205) in various clinical contexts, emphasizing the need for a thorough evaluation of its accuracy and performance.

Relationship of POCT Whole blood PCT and plasma Lab PCT



- Deming regression is generally considered **more accurate** when both X and Y have substantial measurement errors because it minimizes the combined orthogonal (independent of each other) distances.

Passing-Bablok can detect systematic differences but **doesn't account for errors** in the same way.

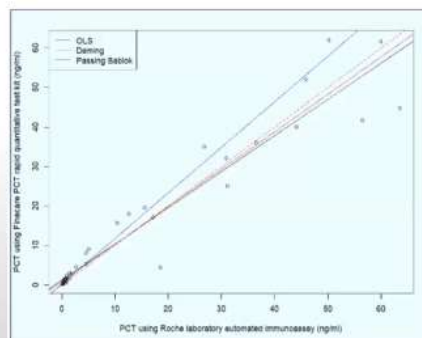


Figure 2: Ordinary Least Square, Deming & Passing-Bablok Regression lines of Finecare versus Cobas

Presented by Assoc. Prof. Dr. Mohd Zulfakar Mazlan

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**DR. AINI ISMAFAIRUS
BINTI ABD HAMID**

(Department of
Neurosciences)

Presenter 1

*Unlocking The Mind: Exploring
Cognitive Functions Through fMRI*



Presenter 2

*The Effectiveness of TB Education
Program Among Secondary
School Students In Kelantan*



**DR. ROSNANI
ZAKARIA**

(Department of
Family Medicine)



Chairperson



**DR. NAZIHAH
BINTI MOHD YUNUS**
(Human Genome Centre)



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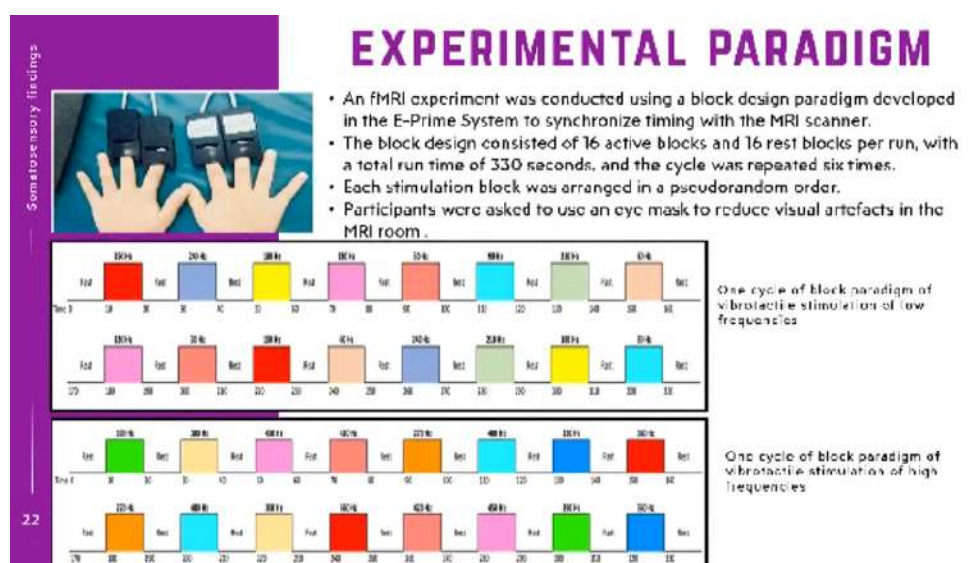
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Unlocking the Mind: Exploring Cognitive Functions Through fMRI

Functional Magnetic Resonance Imaging (fMRI) stands as a crucial tool in revealing complex cognitive functions by detecting blood flow changes linked to brain activity. Its non-invasive nature makes it suitable for diverse participants, including vulnerable populations. fMRI goes beyond mapping cognitive processes, it establishes correlations between brain activity and behaviour, making a substantial contribution to cognitive neuroscience and enhancing our understanding of information processing, decision-making, and sensory input handling.

Research, particularly utilizing resting-state fMRI (rsfMRI), provides valuable data on neurological and mental disorders. One study investigated the differences in functional connectivity (FC) in the default mode network (DMN) between healthy participants and those with mild-moderate traumatic brain injury (TBI). Examining 19 mild-moderate TBI participants (mean age 30.84 ± 14.56) and 22 healthy controls (mean age 27.23 ± 6.32), this study revealed reduced FC in the TBI group, specifically between the posterior cingulate cortex and middle temporal gyrus, indicating disruptions in language processing (Figure 1).

Another study explored working memory in TBI participants, crucial for daily tasks like planning and problem-solving. With 15 mild-moderate TBI (mean age = 30.00 ± 14.92) and 26 healthy controls (mean age 29.42 ± 7.85), a letter n-back task assessed working memory. TBI participants exhibited activation differences in the left superior frontal gyrus, indicative of its role in higher-order processes. Healthy controls, on the other hand, displayed distinctions in the middle frontal gyrus and dorsal cingulate gyrus, indicating more accurate working memory processing.

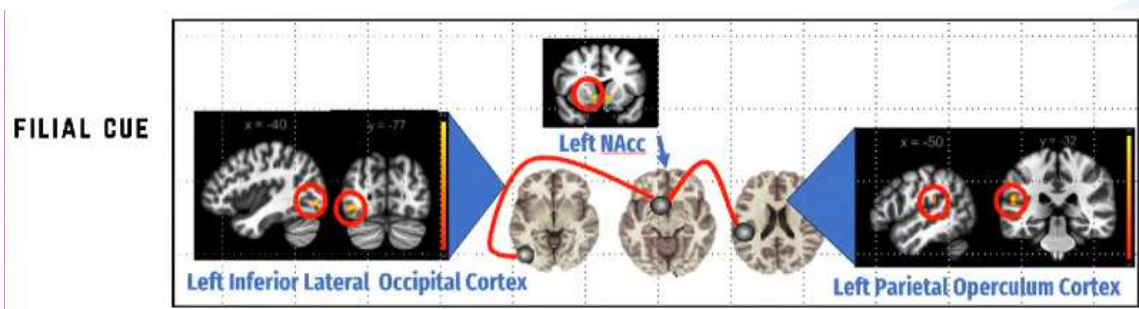


The investigation of rsfMRI and working memory offered insights into neural organization alterations in the TBI brain, influencing cognitive functions and brain activation. Moreover, fMRI serves as a valuable tool for studying the human brain function in healthy individuals, establishing a baseline understanding crucial for comparative studies with neurological or psychiatric conditions. The somatosensory system, responsible for touch perception and sensory-motor activities, remains an understudied area with unclear mechanisms.

A study on somatosensory tasks during vibrotactile stimulation on the fingertips of twenty young adults (mean age 25.1 ± 5.01) with frequencies ranging from 30 Hz to 480 Hz uncovered six significant networks, including somatosensory subcortical, default-mode, and auditory networks, with brain activations suggesting involvement in tactile processing. This somatosensory study contributes to our understanding of somatosensory mechanisms. Furthermore, fMRI's utility extends to exploring reward networks.

Preliminary findings in FC among 14 healthy controls (mean age 23.24 ± 0.70) indicated distinct patterns when viewing cash and filial cues in both cash and filial groups. This study emphasized the importance of selecting appropriate rewards for motivating and engaging individuals, as wrong choices might decrease intrinsic motivation, subsequently impacting productivity.

In conclusion, fMRI emerges as a powerful tool for unravelling the mysteries of the mind and understanding the connection between the brain and behaviour. Its applications extend to clinical and wellness purposes, making it a precious asset in advancing our understanding of cognitive functions, brain-related disorders, mental health and psychiatric conditions, as well as speech and learning disabilities, addictions, emotions, and consumer decision-making.



Presented by Dr. Aini Ismafairus Abd Hamid

The effectiveness of TB education program among secondary school student in Kelantan

Tuberculosis (TB) is contagious and the transmission risk is high in congregate settings like school. Incidence of TB among adolescents is significantly high hence an education programme was developed to improve knowledge, attitude, practice and stigma (KAPS) among them.

This school-based, non-randomised controlled study was conducted among secondary school students with a total of 236 respondents. The KAPS score were assessed before and 1 month after using self-administered validated KAPS questionnaire on TB. Analysis was done using repeated measures ANOVA.

The mean percentage score (SD) for baseline knowledge, attitude, practice and stigma score for the respondents were 54.0 (4.48), 65.6 (1.74), 70.0 (1.43) and 66.0 (6.88), respectively. There was a significant difference ($P < 0.001$) in the knowledge and stigma score for intervention group compared to control group, adjusted for gender, ethnicity and smoking status 4 weeks post-TB educational programme. However, with regards to attitude and practice score, there was no significant difference ($P = 0.210$ and $P = 0.243$, respectively).

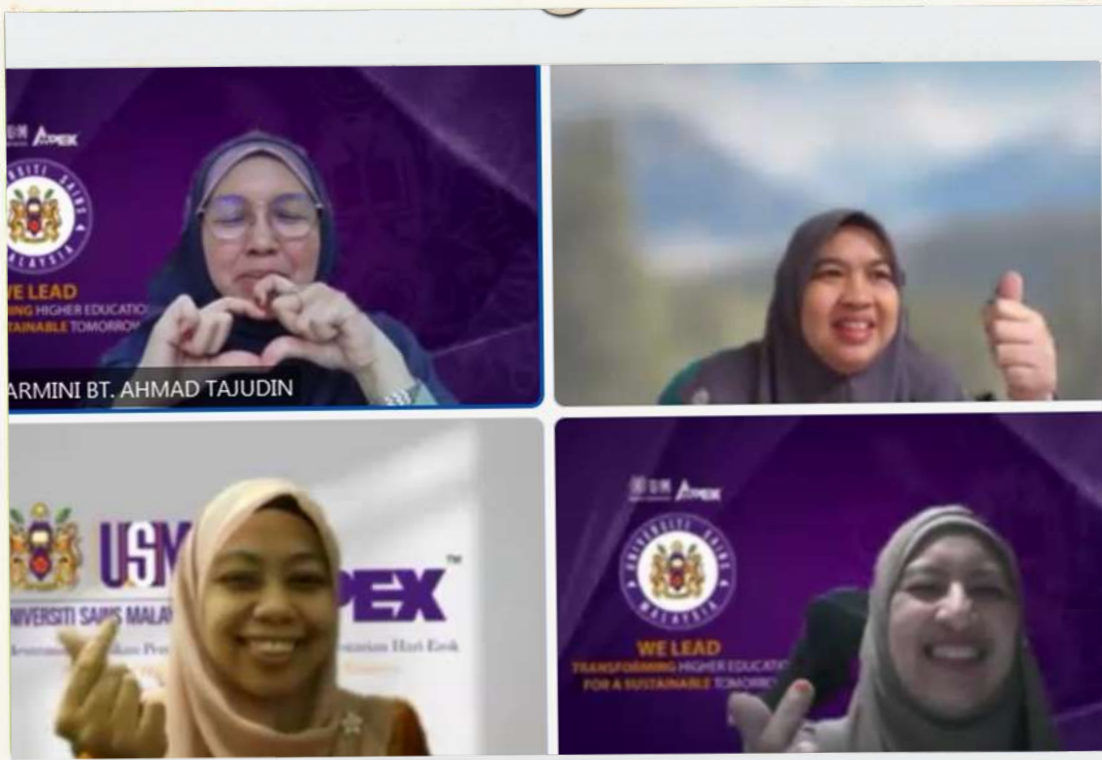
TB education programme was effective in improving knowledge and stigma related to TB. This health education programme can be used as one of the strategies for the prevention and control of TB in schools.



Presented by Dr. Rosnani Zakaria

Photo
GALLERY
Memory

January



February



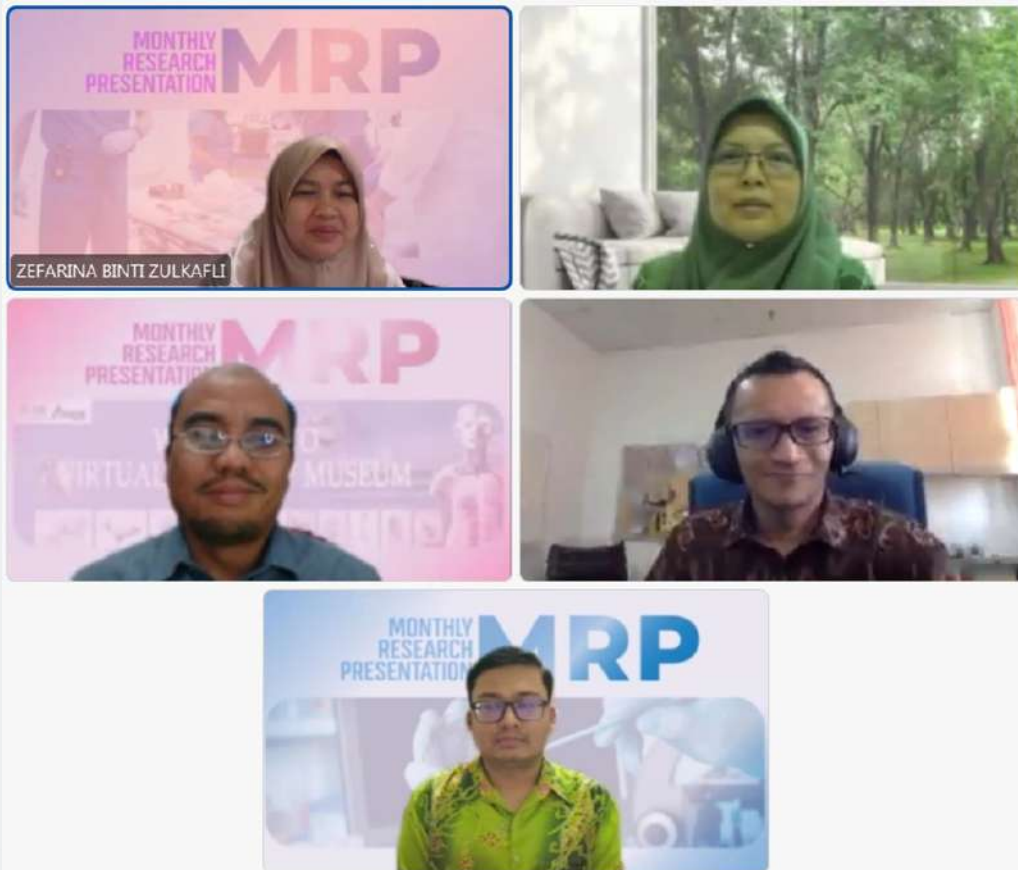
AIRULNIZAM B. TUAN KAMAUZAMAN



March



May



June



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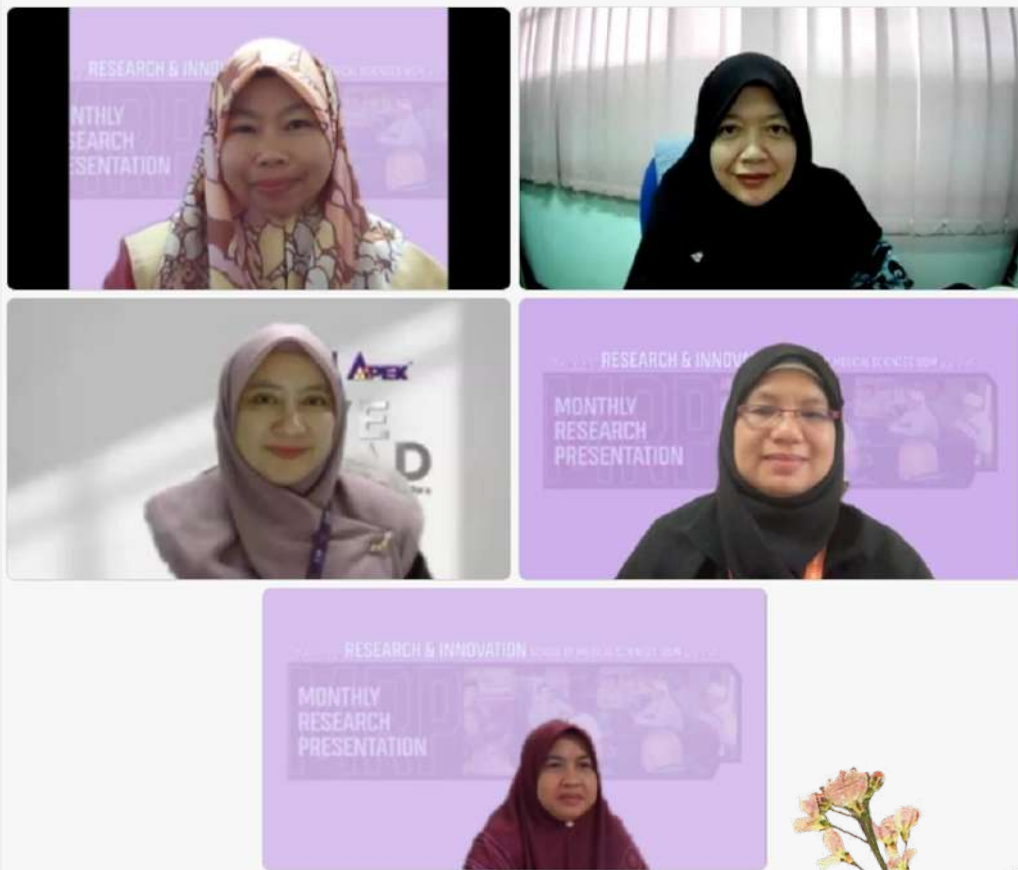


DR. WAN MUHAMMAD ZAHIDUDDIN

July



August



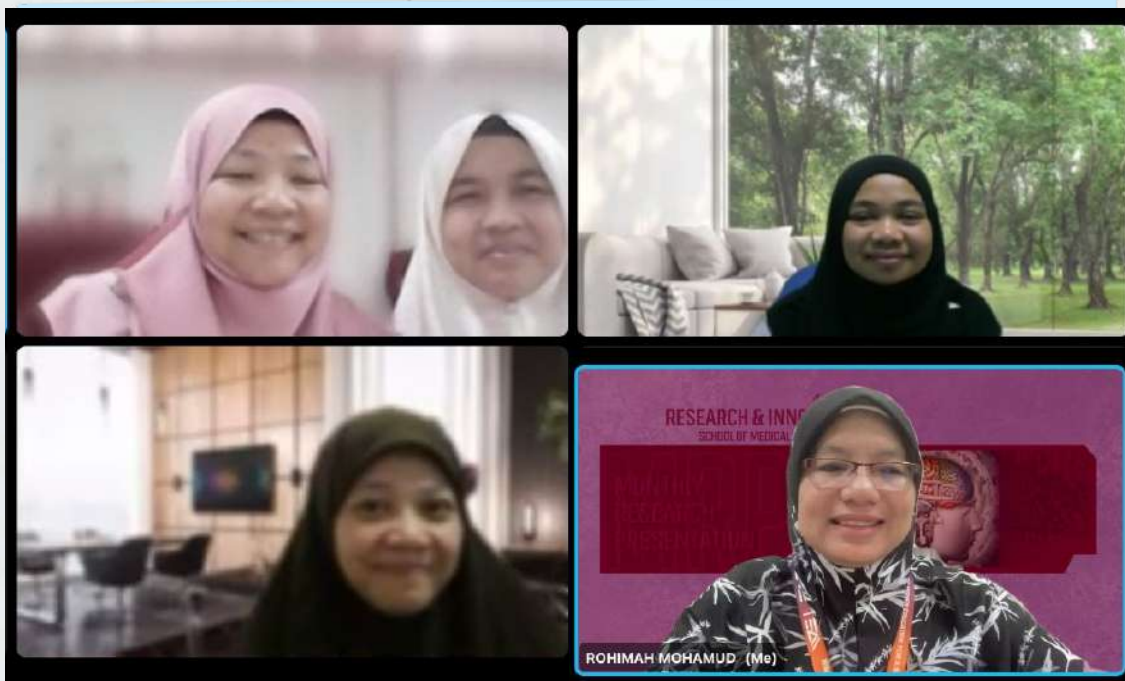
September



October



N^ovember



2023



MRP BULLETIN

PREPARED BY

Dr. Rohimah Mohamud

Dr. Zefarina Zulkafli

Any enquiries, please email to rohimahm@usm or zefarina@usm.my

