



تاسعون  
كسـمـثـورـان  
إنسان  
YEARS  
OF HUMAN  
EXCELLENCE  
1985 - 2025



# Thy GradCONNECT

**IGNITING INNOVATION**

RESEARCH FOR A BETTER FUTURE

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

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# FOREWORD

## **ABOUT IHS GradConnect (IHSGC) 2026**

Since its establishment in 2019, the PAPRSB Institute of Health Sciences (IHS), Universiti Brunei Darussalam, has convened an annual academic event known as the Graduate Research Day (GRD). Conceived and organized by students, for students, this initiative represents a significant platform dedicated to the intellectual and professional development of graduate scholars within the institute.

In 2026, the event underwent a strategic rebranding and was formally renamed IHS GradCONNECT. This transformation reflects an expanded vision and a renewed emphasis on connectivity, collaboration, and sustained academic engagement among graduate students, faculty, and the broader research community.

The main purpose of this event is to provide a podium for current students, spanning both Master's and PhD programs, to share their research works and receive feedback from various health sciences professionals and academics to improve their studies. In addition to individual development, the event also serves as a space to highlight the diversity of health science research within the Institute, ranging from laboratory-based studies to patient-centered investigations, and promoting cross-disciplinary dialogue among researchers.

The 6th GRD in 2025 marked the inaugural introduction of the Three Minute Thesis (3MT) competition, challenging participants to distill complex research into concise, compelling, and accessible presentations. Evaluated by a diverse panel of judges from across the university, the 3MT competition facilitates interdisciplinary engagement and provides a platform for sharing knowledge transcending traditional faculty boundaries. In 2026, IHSGC will continue to feature the 3MT competition alongside poster and oral presentations, maintaining its commitment to diverse research formats and promoting effective scholarly communication among graduate students.

In an increasingly interdisciplinary world, emphasizing the importance of bringing students, researchers and distinguished academics together is crucial. IHS GradConnect 2026 is more than just an event; it is a stage for networking and mentorship for graduate students. It offers an opportunity to receive constructive criticism, explore potential collaborations, and further strengthen the research community that will shape the future of healthcare in Brunei Darussalam.

## GUEST OF HONOUR'S MESSAGE



### PROFESSOR DR. KENNETH KOK YUH YEN

Dean

Pengiran Anak Puteri Rashidah Sa'adatul  
Bolkiah Institute of Health Sciences  
Universiti Brunei Darussalam

It is my great pleasure to welcome you to this year's IHS GradCONNECT 2026, a celebration of scholarly excellence, intellectual curiosity and the vibrant research culture within our academic community.

The theme for this year's event, "Igniting Innovation: Research for a Better Future," reflects our shared commitment to advancing knowledge that is not only rigorous and impactful, but also responsive to the evolving needs of society. In an era marked by rapid technological advancement and complex global challenges, the role of research particularly interdisciplinary collaboration has never been more vital. This occasion provides an invaluable platform for our graduate students and researchers to exchange ideas, showcase their work and engage in meaningful dialogue across disciplines.

The breadth and depth of research presented here are a testament to the dedication, creativity and perseverance of our graduate community. From foundational science to applied innovation, these contributions exemplify the spirit of inquiry that drives progress and shapes a better future.

Building on the success of last year's programme, we are delighted to continue the Three Minute Thesis (3MT) competition as a key feature of this year's event. This segment challenges our graduate students to communicate their research with clarity, precision and impact within a highly constrained timeframe. It not only sharpens their ability to engage diverse audiences but also underscores the importance of making research accessible and relevant beyond academic boundaries.

I would like to extend my sincere appreciation to all participants, supervisors, reviewers and organizers whose collective efforts have made this event possible. Your commitment to fostering a dynamic and supportive research environment is truly commendable.

I hope that this IHS GradCONNECT will inspire new ideas, spark meaningful collaborations and further strengthen our shared pursuit of excellence in research and innovation.

## **STUDENT CO-CHAIRS' MESSAGE**

Since its establishment in 2019, this annual academic event, formerly known as Graduate Research Day, has been a platform organized by students, for students. This year, we have undergone a strategic rebranding to IHS GradCONNECT, reflecting our expanded vision focusing on connectivity and shared discovery. The IHS GradCONNECT event is to provide a podium where the graduate students share their works, whether it is laboratory-based studies or population-centered investigations. Furthermore, this event highlights their research findings, which ignites stimulating discussions, and at the same time improves their presentation skills and gain valuable feedback on their research.

This year, we gather under a theme called "Igniting Innovation: Research for a Better Future." Innovation is often described as the key to staying relevant in the current fast-paced world. But in the health sciences field, it is needed for our progress and survival. Through groundbreaking ideas, we bridge the gap in taking complex protocols and translate those findings into tangible health solutions. These solutions will then create lasting positive impacts for a better future.

One of our highlights this year is the Three Minute Thesis (3MT) competition. First introduced last year, 2025, the 3MT is special as it challenges us to take years of complex science data and make the information easily accessible to everyone. It is more than just a data, it is storytelling. Together with poster and oral presentations, it remains a vital part in how we shared our research with the community.

In an increasingly interdisciplinary world, IHS GradCONNECT 2026 is more than just an event; it is a space for networking and mentorship. I encourage every student here to use the opportunity to receive constructive criticism, asks burning questions and explore potential collaborations. We would also like to take this opportunity to thank our organizing committee, which have been the driving force behind this event. And to our participants: this celebration is for you. It is a tribute to your excellence and a stage for your hard work to truly shine. We recognize that behind every poster, presentation, and data set, lies a journey defined by late nights, deep thoughts, and the relentless pursuit of truth. Your work is more than an academic requirement; it is a courageous contribution to the global body of knowledge.

Let us use these two days to strengthen the connections that will drive innovation and excellence in health sciences for years to come. I wish you all an insightful and inspiring experience. Thank you.

**Warm regards,**

**Nor Amal Hazirah Hassan & Amal Ummi Naqibah Md Zain**

MHSc Midwifery by Research Student & MHSc Biomedical Science by Research Student

Student Co-Chairs, IHS GradCONNECT 2026

## **KEYNOTE SPEAKER**



### **Seeing the Invisible: Innovation at the Intersection of Medicine, Imaging, and Insight**

Dr Erkin Erdal,

Department of Oncology, University of Oxford

Innovation is often framed as building something entirely new. But sometimes, the real breakthrough comes from learning to see what others have overlooked. I'd like to reflect on innovation in health research through the lens of my work in clinical research and machine learning, where routine pathology slides can reveal far more than they appear to at first glance.

From there, let us explore a broader idea: that innovation is not just about technology, but also about perspective, curiosity, and a willingness to cross boundaries between disciplines.

Aligned with this year's theme, Igniting Innovation: Research for a Better Future, my talk is meant to be an invitation to think ambitiously, work collaboratively, and recognise that better futures often begin with a different way of seeing.

# COMMITTEE

## IHS GRADCONNECT FGSC MEMBERS



**Pg Dr Nurolaini Pg Hj  
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Deputy Dean (Academic  
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**Prof Dr. Kenneth Kok  
Yuh Yen**  
Dean of IHS



**Dr Suwarni Hj Md  
Diah**  
Deputy Dean (Research,  
Innovation and  
Sustainability)

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**Dr Siti Rohaiza  
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Programme Leader /  
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**Dr Lim Ya Chee**  
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**Nur Amal Bazilah  
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**Liaw Hui Zoe**



**Nurlailasari  
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**Sima**



**Nur Afiqah**  
**Sonoran**



**Hjh Fathiin Najihah Hj**  
**Mohd Rozaini**



**Amira Asyiqin Abdul**  
**Wahab**

# PROGRAMME SCHEDULE

Time	Session
<b>Day 1</b>	
7:30 AM - 8:00 AM	Registration
8:00 AM - 8:15 AM	Opening Doa Welcoming Speech from Student Chairs
8:15 AM - 8:25 AM	Opening Speech from Guest of Honour: <b>Professor Dr. Kenneth Kok Yuh Yen</b> Dean of PAPRSB Institute of Health Sciences, Universiti Brunei Darussalam
8:25 AM - 8:45 AM	Keynote Speech: "Seeing the Invisible: Innovation at the Intersection of Medicine, Imaging, and Insight" <b>Dr Erkin Erdal</b> Department of Oncology, University of Oxford
8:45 AM - 8:55 AM	Photo Session
<b>Tea Break (refreshments are provided)</b> 8:55 AM - 9:20 AM	
<b>Oral Presentation</b> (Morning - Session 1)	
9:20 AM - 9:50 AM	Coffee Talk: "Architecting Your Future: Why Thinking Differently is a Graduate's Superpower" <b>AP Dr HjH Asmah Husaini</b> Moderator: <b>Dr Siti Rohaiza Ahmad</b> Programme Leader of Graduate Studies
9:50 AM - 10:10 AM	"Psychosocial Determinants of Physical Activity Among Public Sector Librarians: A Cross-Sectional Study in Brunei Darussalam" By: <b>Amirul Rahman (21H3301)</b> Supervisor(s): Dr Nik AA Tuah, Dr Hanif Abdul Rahman
10:10 AM - 10:30 AM	"Exploring Mental Health Help-Seeking Behaviours Among Students at Higher Education Institutions in Brunei Darussalam: A Constructivist Grounded Theory Study" By: <b>Rinoa Vun Hui Jun (24H8721)</b> Supervisor(s): Dr Deeni Rudita Idris, Dr Agong Lupat
<b>Mobility Break</b> 10:30 AM - 10:40 AM	

Time	Session
<b>Day 1</b>	
10:40 AM - 11:00 AM	<p><b>"The Perceived Image and Quality of Emergency Nurses, and How it Affects Help-Seeking Behaviour"</b></p> <p>By: <b>Wa'ie Aliakbar (24M1831)</b> Supervisor(s): Dr Deeni Rudita Idris</p>
11:00 AM - 11:20 AM	<p><b>"Transition Readiness of Bruneian Undergraduate Nursing Students: A Qualitative Study"</b></p> <p>By: <b>Razanah Rosli (24M8721)</b> Supervisor(s): Dr Yusrita Zolkefli</p>
11:20 AM - 11:40 AM	<p><b>"Bridging Academia and Clinical Practice Through a Hybrid PBL-Digital Framework for Teaching Cardiovascular Pathophysiology"</b></p> <p>By: <b>Nana Aliyu Kakumi Iliyasu (25M1881)</b> Supervisor(s): Dr Hanif Abdul Rahman, Dr Abdullahi Abubakar Imam</p>
<b>Poster Viewing &amp; Lunch Break</b> 11:40 AM - 1:50 PM	
<b>Oral Presentation</b> (Afternoon - Session 1)	
1:50 PM - 2:10 PM	<p><b>"Knowledge, Attitudes, and Practices of Vaccination Among Older Adults: A Convergent Mixed-Method Study in Brunei Darussalam"</b></p> <p>By: <b>Syafiqah Aliah Miza Matsamri (24M1862)</b> Supervisor(s): Shyh Poh Teo, Suprianto Suryono, Dr Sharimawati Sharbini, Dr Khadzah Haji Abdul Mumin, Dr Li Ling Chaw</p>
2:10 PM - 2:30 PM	<p><b>"Unsupervised Machine Learning for Features Engineering in Retrospective Cohort Analysis of Clinical, Genomic, and Laboratory Predictors in Prostate Cancer Dataset"</b></p> <p>By: <b>Hein Minn Tun (23H8750)</b> Supervisor(s): Prof. Mohd Ayub Sadiq @Lin Naing, Owais Ahmed Malik, Muhammad Syafiq Abdullah, Thu Ta, Dr Hanif Abdul Rahman</p>
2:30 PM - 2:50 PM	<p><b>"Machine Learning-Based Risk Prediction for Colorectal Cancer: Towards A Digital Screening Tool for Brunei"</b></p> <p>By: <b>Umni Salwa Suhaime (23H1801)</b> Supervisor(s): Dr Hanif Abdul Rahman, Prof. Mohd Ayub Sadiq @Lin Naing</p>
<b>Poster Presentation &amp; Judging (Top 5)</b> 2:50 PM - 3:50 PM Tea Break	
<b>END OF DAY 1</b>	

Time	Session
<b>Day 2</b>	
7:30 AM - 8:00 AM	Registration
<b>Oral Presentation Morning - Session 2</b>	
8:00 AM - 8:20 AM	<p><b>“Feasibility of an Intervention Study Exploring the Relationship Between Nutritional Awareness and Body Image Among University Students in Brunei Darussalam”</b>            By: <b>Pushpa Baladandapla Shivappa (22H8906)</b>            Supervisor(s): Dr Siti Norhedayah Abdul Latif, Dr Siti Rohaiza Hj Ahmad</p>
8:20 AM - 8:40 AM	<p><b>“The Prevalence of Peripheral Arterial Disease, and its Associated Sociodemographic, Risk Factors and Foot Pathologies amongst Type 2 Diabetes Mellitus Hospital-Based Patients with Diabetic Foot Ulcers in Brunei; Retrospective Analysis”</b>            By: <b>Hajah Majidah Binti Haji Suhip (23H1802)</b>            Supervisor(s): Dr Sharimawati Sharbini, Dr Khadizah Haji Abdul Mumin, Dr Hajah Norafizah Haji Zaine</p>
8:40 AM - 9:00 AM	<p><b>“Prevalence and Risk Factors Association of Low Back Pain Among Pregnant Women in Brunei Darussalam”</b>            By: <b>Zirwatul Maziah Zulkifli (23M1801)</b>            Supervisor(s): Dr Sharimawati Sharbini, Dr Sarena Hashim, Prof. Mohd Ayub Sadiq @Lin Naing, Pg Dr Hjh Roserahaini Pg Hj Idros, Mohamed Kassim Abdul Wahab</p>
<b>Tea Break (Refreshments are provided) 9:00 AM - 9:20 AM</b>	

Time	Session
<b>Day 2</b>	
<b>Oral Presentation Morning - Session 3</b>	
9:20 AM - 9:40 AM	<p><b>"Phytochemical Profiling, Antioxidant Capacity, and Cytotoxicity of <i>Leea indica</i> and <i>Cosmos caudatus</i>: A Comparison of Extraction Methods"</b></p> <p>By: <b>Amal Umami Naqibah Md Zain (23M8702)</b> Supervisor(s): Dr Nurolaini Kifli, Dr Hui Poh Goh, Dr Hazim Ghani</p>
9:40 AM - 10:00 AM	<p><b>"Metabolic Compensation &amp; Redox Imbalance Following Mitochondrial Oxidative Phosphorylation Dysfunction"</b></p> <p>By: <b>Nur Izzah Bungsu (22H8905)</b> Supervisor(s): AP Dr Hj Mas Rina Wati Haji Abdul Hamid, AP Mark IR Petalcorin</p>
10:00 AM - 10:20 AM	<p><b>"Comparative Evaluation of Extraction Techniques on Biological Properties of local <i>Nephrolepis biserrata</i> and <i>Rhodomyrtus tomentosa</i> Leaves"</b></p> <p>By: <b>Muhamad Norna Beel Syafiq Zulkefli (23M8701)</b> Supervisor(s): Dr Hui Poh Goh, Dr Hazim Ghani, Dr Nurolaini Kifli</p>
<b>Mobility Break 10:20 AM - 10:30 AM</b>	
10:30 AM - 10:50 AM	<p><b>"Evaluation of Silver Nanogel Loaded with Micronised Activated Charcoal for Wound Healing Applications"</b></p> <p>By: <b>Liaw Hui Zoe (25M8760)</b> Supervisor(s): Dr Rajan Rajabalaya, Dr Sheba R David</p>
10:50 AM - 11:10 AM	<p><b>"Influence of Extraction Technique on Phytochemical Profiling and Biological Properties of Local <i>Nephrolepis biserrata</i> and <i>Leea indica</i> Root Extracts"</b></p> <p>By: <b>Jalaludin Ali (24M8760)</b> Supervisor(s): Dr Hazim Ghani, Dr Nurolaini Kifli, Dr Hui Poh Goh</p>
11:10 AM	<b>Poster Viewing</b>
<b>Lunch Break 12:00 PM</b>	

Time	Session
<b>Day 2</b>	
<b>3MT Presentations</b>	
1:00 PM - 1:15 PM	3MT Registration
1:30 PM - 1:55 PM	3MT Presentation
<b>Mobility break 1:55 PM - 2:00 PM</b>	
2:00 PM - 2:30 PM	3MT Presentation
2:30 PM - 2:45 PM	Judges Deliberation & Voting
<b>Tea Break (Refreshments are provided) 2:45 PM - 3:30 PM</b>	
3:30 PM onwards	<p><b>Closing Speech by:</b>  <b>Professor Dr. Kenneth Kok Yuh Yen</b>            Dean of PAPRSB Institute of Health Sciences, Universiti Brunei Darussalam</p> <p><b>Result Announcement by:</b>  <b>Dr Siti Rohaiza Hj Ahmad</b>            Programme Leader of Graduate Studies</p> <p><b>Closing Doa</b></p>
<b>END OF DAY 2</b>	

POSTER PRESENTERS	
11	<p><b>"Dietary Patterns among Older Adults in Brunei Darussalam: A cross-sectional study"</b>  <b>Mu'syadzwinna Binti Midon (25M1863)</b>            Supervisor(s): Siti Rohaiza Binti Ahmad, Shahrimawati Binti Hj Sharbini</p>
12	<p><b>"Deep Longitudinal Representation Encoding and Comparative Machine Learning for Prognosis of Prostate Cancer Survival in Brunei Darussalam: A Retrospective Cohort Study"</b>  <b>Hein Minn Tun (23H8750)</b>            Supervisor(s): Mohd Ayub Sadiq@Lin Naing, Owais Ahmed Malik , Muhammad Syafiq Abdullah, Thu Ta, Hanif Abdul Rahman</p>
13	<p><b>"ASEAN Tuberculosis Incidence Trends and Future Risk: A Predictive Modelling Study for SDG 3.3.2 by 2030"</b>  <b>Hazimah Yussof (22L2003)</b>            Supervisor(s): Hanif Abdul Rahman</p>
14	<p><b>"Diagnostic Pathway Mapping and Clinical Audit of Male Infertility Services in Brunei Darussalam (PHASE 1)"</b>  <b>Bazilah Mazlan (25H8170)</b>            Supervisor(s): Siti Normadhirah Amdani, Hj Muhammad Assyafie Hanif</p>
15	<p><b>"Phytochemical Profiling and Anti-urolithiatic Potential of Morus alba Linn Extracts: An In Vitro Study"</b>  <b>Amira Asyiqin Abdul Wahab (22M8947)</b>            Supervisor(s): Nurulaini Kifli, Suwarni Diah, Siti Hanna Muharram</p>
16	<p><b>"Phytochemical Analyses of Various Local Bruneian Rice"</b>  <b>Nurlailasari Sima (25M1801)</b>            Supervisor(s): Noor Faizah Mohd-Naim, Shirley Huan Fang Lee, Ihsan Nazurah Zulkipli, Siti Rohaiza Hj Ahmad</p>
17	<p><b>"Investigating The Biological Effects Of Cerumen And Propolis Of Local Geniotrigona Thocacica "</b>  <b>Amirul Akmal Bin Abu Bakar (25M1802)</b>            Supervisor(s): Dr Suwarni binti Hj Mohd Diah, and Dr Hazim Ghani</p>
18	<p><b>"From Method to Measurement: Total Phenolic Content Analysis of Morus alba leaf extracts"</b>  <b>Hjh Fathiin Najihah bte Hj Md Rozaini (24H8760)</b>            Supervisor(s): Nurulaini Kifli, Jestin Chellian</p>

3MT PRESENTERS	
1	<p><b>“Student Health, Wellbeing, and Support”</b></p> <p style="text-align: right;"><b>Razanah Rosli (24M8721)</b> Supervisor(s): Dr Yusrita Zolkefli</p>
2	<p><b>“How We Tried to Unlock Nature’s Secret Weapons”</b></p> <p style="text-align: right;"><b>Jalalludin Ali (24M8760)</b> Supervisor(s): Dr Hazim Ghani, Dr Nurolaini Kifli, Dr Hui Poh Goh</p>
3	<p><b>“When 2 is not just 1+1”</b></p> <p style="text-align: right;"><b>Liaw Hui Zoe (25M8760)</b> Supervisor(s): Dr Rajan Rajabalaya, Dr Sheba R David</p>
4	<p><b>“Emergency Nurses: Heroes, Yet Human”</b></p> <p style="text-align: right;"><b>Wa'ie Aliakbar (24M1831)</b> Supervisor(s): Dr Deeni Rudita Idris</p>
5	<p><b>“Smart Eating, Active Living, Positive Thinking: A pathway for healthy life”</b></p> <p style="text-align: right;"><b>Pushpa Baldandapla Shivappa (22H8906)</b> Supervisor(s): Dr Siti Norhedayah Abdul Latif, Dr Siti Rohaiza Hj Ahmad</p>
6	<p><b>“Stone-Free Living”</b></p> <p style="text-align: right;"><b>Hjh Fathiin Najihah Hj Md Rozaini (24H8760)</b> Supervisor(s): Dr Nurolaini Kifli, Dr Jestin Chelian</p>
7	<p><b>“Detecting Colorectal Cancer: The right test, for the right person, at the right time.”</b></p> <p style="text-align: right;"><b>Ummi Salwa Suhaime (23H1801)</b> Supervisor(s): Dr Hanif Abdul Rahman, Prof Mohd. Ayub Sadiq @Lin Naing</p>
8	<p><b>“Waiting to be Told: Closing the Vaccine Communication Gap for Older Adults”</b></p> <p style="text-align: right;"><b>Syafiqah Aliah Miza Matsamri (24M1862)</b> Supervisor(s): Shyh Poh Teo, Suprianto Suryono, Dr Sharimawati Sharbini, Dr Khadizah Haji Abdul Mumin, Dr Li Ling Chaw</p>
9	<p><b>“Peripheral Arterial Disease in Type 2 Diabetes in Brunei Darussalam”</b></p> <p style="text-align: right;"><b>Hajah Majidah Haji Suhip (23H1802)</b> Supervisor(s): Dr Sharimawati Sharbini, Dr Khadizah Haji Abdul Mumin, Dr Hajah Norafizah Haji Zaine</p>
10	<p><b>“Why Midwives Don’t Report Adverse Events?”</b></p> <p style="text-align: right;"><b>Nor Amal Hazirah Hassan (23M8742)</b> Supervisor(s): Dr Hanif Abdul Rahman, Dr Khadizah Haji Abdul Mumin</p>

## 3MT PRESENTERS

11	<p><b>"Through the Screen: Students' Reality with Digital Self-Help"</b></p>	<p><b>Catherine Abu Jahal (23M8720)</b> Supervisor(s): Dr Agong Lupat, Dr Khadziah Haji Abdul Mumin</p>
12	<p><b>"Common, Yes. Normal, No."</b></p>	<p><b>Zirwatul Maziah Zulkifli (23M1801)</b> Supervisor(s): Dr Sharimawati Sharbini, Dr Sarena Hashim, Prof Mohd. Ayub Sadiq @Lin Naing, Pg Dr Hjh Roserahaini Pg Hj Idros, Mohammed Kassim Abdul Wahab</p>
13	<p><b>"Achieving successful transition"</b></p>	<p><b>Amal Amirah Mohammad Asri (23M8741)</b> Supervisor(s): Dr Khadziah Haji Abdul Mumin</p>



## Psychosocial Determinants of Physical Activity Among Public Sector Librarians: A Cross-Sectional Study in Brunei Darussalam

Amirul Rahman (21H3301)<sup>a</sup>,

Nik AA Tuah<sup>a</sup>, Hanif Abd Rahman<sup>a</sup>

<sup>a</sup>PAPRSB Institute of Health Sciences, Universiti Brunei Darussalam

**Background:** Physical inactivity is a leading global health risk, with 31% of adults worldwide not meeting recommended activity levels, yet evidence on psychosocial determinants among sedentary professionals remains limited.

**Objectives:** To examine psychosocial determinants of physical activity and their associations with socio- demographic characteristics.

**Methods:** A cross-sectional survey was conducted in May to June 2025 among 153 librarians. Data were collected using a validated psychosocial and behavioural PA questionnaire informed by established psychosocial theories. Descriptive statistics and multiple linear regression were conducted to examine the associations between demographic variables and psychosocial determinants, with P value of < 0.05 considered statistically significant.

**Results:** Librarians reported moderate self-efficacy, behavioural intention, leisure-time PA, and workplace PA, with high perceived benefits and response efficacy. Female librarians had significantly lower self-efficacy ( $\beta = -0.43$ ,  $p = 0.023$ ), behavioural intention ( $\beta = -21.56$ ,  $p = 0.001$ ), and workplace PA ( $\beta = -0.50$ ,  $p = 0.007$ ) than males. Older groups perceived fewer benefits ( $\beta = -0.74$  to  $-0.53$ , all  $p < 0.05$ ) and lower inactivity severity ( $\beta = -0.72$ ,  $p = 0.023$ ). Higher education was unexpectedly linked with lower perceived vulnerability ( $\beta = -0.39$ ,  $p = 0.046$ ) and weaker intention ( $\beta = -8.70$ ,  $p = 0.031$ ). Officer-level librarians reported higher leisure-time PA ( $\beta = 8.59$ ,  $p = 0.042$ ) and workplace PA ( $\beta = 0.46$ ,  $p = 0.003$ ) than support staff.

**Conclusion:** Socio-demographic characteristics shaped psychosocial determinants and PA behaviours among librarians. Tailored interventions should be considered. Findings may extend to other sedentary ISCO-08 occupations.



## Exploring Mental Health Help-Seeking Behaviours Among Students at Higher Education Institutions in Brunei Darussalam: A Constructivist Grounded Theory Study

Rinoa Vun Hui Jun (24H8721)<sup>a</sup>,

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**Background:** Mental health is a fundamental aspect of well-being. The mental well-being of youths, especially Higher Education Institution (HEI) students in Brunei Darussalam, has been declining ever since the COVID-19 pandemic. When an individual's overall mental well-being gets compromised, individuals may engage in Help-Seeking Behaviours (HSB), which are defined as the proactive actions that individuals take to identify, seek, and secure relevant care from mental health professionals. Understanding the mental health HSB of students is important to address the growing concerns surrounding student mental health in Brunei.

**Design and Methods:** This study aims to develop a theory explaining how and why students at higher education institutions seek or avoid help for mental health concerns. The research will adopt a qualitative design and a methodological approach using the Constructivist-Grounded Theory (C-GT), with data being collected through a mix of individual, semi-structured interviews, focus group discussions (conditional), demographic questionnaire, and field notes with Brunei's HEIs students (and potentially counsellors). Initially, participants will be purposively sampled and then followed by theoretical sampling guided by emerging concepts. The study consists of three phases: (1) initial interviews of students, (2) data analysis and theoretical sampling, (3) member-checking, peer-debriefing, and thesis write-up.

**Results:** Research is ongoing.

**Conclusion:** Mental health challenges among HEI students have increasingly been recognised as a serious concern globally, and more specifically, within Brunei Darussalam. Yet, despite the existence of mental health support systems in universities, there is limited research focusing on higher educational institutions in Brunei and these students' mental health help-seeking behaviours.



## The Perceived Image and Quality of Emergency Nurses, and How it Affects Help-Seeking Behaviour

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**Background:** Emergency Department (ED) nurses face immense pressure to be resilient “heroes”, a label that frequently masks their need for systemic support. While help-seeking is crucial for mental and professional longevity, stigma and the “hero” discourse that portrays nurses as invincible sacrifices, often hinders them from seeking the support they need to survive.

**Objectives:** The study aims to investigate the correlation between an ED nurses’ perceived image and their help-seeking behaviours. The objectives are to identify and explore their perceived image and qualities of an ED nurse in Brunei, and to Explore their help-seeking behaviours and analyze how their perceived image may affect it

**Methods:** A Phenomenological Qualitative Research, the study utilized “semi-structured” individual interviews. “Purposive” sampling was used, as Clinical Research Facilitators (CRF) aided in recruitment of nurses by disseminating the recruitment posters. An interview guideline was used for the individual interviews, which was then transcribed and thematically analyzed.

**Results:** Twenty four (n=24) operational ED Nurses were successfully interviewed from all 4 districts of Brunei Darussalam. Findings showed that the nurses commonly found their perceived image did affect their help-seeking behaviors. Themes such as “Team first, Myself later”, “Professional ego” and “Manager matters” were found to affect their help-seeking behaviours.

**Conclusions:** This study found that the perceived image of ED nurses did have an effect on their help-seeking behaviours, despite their courage and wisdom, they still requested the highest priority on the management to fulfill their welfare needs. Where this ranges from staffing numbers, to personal space for breaks.



## Transition Readiness of Bruneian Undergraduate Nursing Students: A Qualitative Study

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**Background:** The transition from nursing student to professional practice is a critical yet challenging phase, often characterized by "reality shock." Despite existing educational strategies, many graduates continue to report low confidence and high stress, indicating gaps in how curricula prepare students for this transition.

**Objectives:** This study aimed to examine the alignment between an undergraduate nursing curriculum and students' perceived readiness for professional practice within the context of Universiti Brunei Darussalam.

**Methods:** A qualitative, multi-method design was employed. Document analysis of the official curriculum was conducted using Tyler's model. This was complemented by thematic analysis of data from semi-structured interviews and focus groups with 39 undergraduate nursing students across all year levels.

**Results:** Analysis revealed a paradox: while the curriculum was formally aligned with clinical competencies, student confidence often decreased as graduation approached. Key findings identified curricular gaps in pharmacology and digital health literacy, the critical influence of mentorship quality on student wellbeing, and significant emotional and logistical barriers to transition readiness.

**Conclusions:** Transition readiness extends beyond clinical skill to include psychological preparedness and professional identity. To better support students, curricula should integrate targeted enhancements in key competency areas while strengthening mentorship frameworks and institutional support systems.



## Knowledge, Attitudes, and Practices of Vaccination Among Older Adults: A Convergent Mixed-method Study in Brunei Darussalam.

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**Background:** There is limited understanding of general vaccination knowledge, perceptions, and uptake among older adults in Brunei Darussalam.

**Objectives:** To examine vaccination-related knowledge, attitudes, and practices (KAP) among community-dwelling older adults aged  $\geq 60$  years in Brunei.

**Methods:** A convergent mixed-methods study was conducted, combining a cross-sectional interviewer-assisted KAP survey with qualitative focus group discussions. Quantitative data were analysed descriptively and inferentially, integrated with qualitative data that underwent thematic analysis.

**Results:** Among 142 survey participants (mean age 69.6 years, SD = 5.40), most were women (73.3%) and Malays (76.7%). Higher education was associated with higher knowledge scores (college vs primary: mean difference = 0.92, 95% Confidence Interval [95%CI]: 0.20, 1.64), while participants with chronic diseases reported more positive vaccination attitudes than those without [Mean difference = 2.43 (95%CI: 0.58, 4.29)]. Women reported lower worry about unforeseen future effects than men [Mean difference = -0.34 (95%CI: -0.65, -0.04)], whereas higher education was associated with greater worry. COVID-19 vaccine uptake was highest (86.6%), with free vaccination (85.9%) and family protection (83.1%) as key motivators, while concerns about side effects (38.0%) and insufficient information (37.3%) were major barriers; doctors (90.8%) and government-endorsed mass media (69.0%) were the most preferred sources. Qualitative findings (n=9) highlighted COVID-19 as a cue for vaccine awareness, vaccination driven mainly by perceived obligation following healthcare recommendations rather than personal intention, and strong trust in authorities alongside information gaps.

**Conclusions:** Vaccination practices were context-dependent and highly responsive to authoritative messaging. Sustaining adult immunisation beyond pandemic contexts requires public health strategies that prioritise trusted healthcare providers, transparent risk communication, and health-literacy-appropriate messaging for older adults. Strengthening routine clinician engagement and coordinated public communication is essential to support informed vaccination decisions and long-term vaccine confidence.



## Unsupervised Machine Learning for Features Engineering in Retrospective Cohort Analysis of Clinical, Genomic, and Laboratory Predictors in Prostate Cancer Dataset

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**Background:** Prostate cancer is a heterogeneous disease with substantial challenges in stratifying patients using routinely collected clinical, laboratory and treatment information. Unsupervised machine learning approaches provide a data-driven means to explore latent patterns and disease trajectories without predefined outcomes.

**Objectives:** The study aimed to apply and compare time-independent and time-dependent unsupervised learning methods to characterise hidden structures within the prostate cancer cohort for feature engineering in multimodal AI development.

**Method:** A retrospective cohort study was conducted for prostate cancer patients treated at the Brunei Cancer Centre between January 2018 and December 2024 with clinical, treatment, laboratory and genomic data extracted from electronic health records and clinical reports. Data pre-processing involved data cleaning, harmonisation, and imputation. Time-independent unsupervised machine learning model was developed using a time lag approach with methods including principal component analysis (PCA), K-means clustering, hierarchical clustering, DBSCAN, association rule learning, and neural network autoencoders. For time-dependent analysis, temporal autoencoder derived latent representations were combined with multivariate Dynamic Time Independent Warping (DTIW) and Hierarchical Agglomerative Clustering (HAC), using a hybrid distance matrix to accommodate mixed numerical and categorical features.

**Result:** Time-independent analyses, Linear (PCA), centroid-based (K-means), density-based (DBSCAN), hierarchical (Ward linkage), rule-based (association rule learning), and representation-learning (autoencoder) approaches demonstrated a predominantly homogeneous structure with a small number of atypical or extreme cases. Density-based clustering and autoencoders captured non-linear relationships and identified atypical patient profiles, while association rule learning revealed clinically plausible variable dependencies. Time-dependent DTIW-HAC identified four clusters; however, a single dominant cluster contained most patients, and cluster validity indices were modest, indicating gradual rather than discrete disease progression patterns.

**Conclusion:** Unsupervised learning approaches revealed latent structures and temporal similarities within longitudinal prostate cancer data, but limited clinical interpretability and feature selection capability. Further analysis necessitates supervised modelling approaches to achieve clinically meaningful inference and treatment prediction.



## Machine Learning-Based Risk Prediction for Colorectal Cancer: Towards A Digital Screening Tool for Brunei

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**Background:** Colorectal cancer (CRC) is the second most common cancer in Brunei, with among the highest incidence rates in Southeast Asia. Current screening relies on opportunistic fecal immunochemical tests (FIT) and colonoscopy, which are invasive, resource-intensive, and place substantial strain on the health system. The absence of a structured triage system results in inefficient use of colonoscopy resources. Machine learning (ML)-based risk prediction offers a scalable, non-invasive approach to improve early detection and optimise screening efficiency.

**Objectives:** This project aims to develop, optimise, and externally validate a machine learning-based CRC risk prediction model using non-invasive predictors, tailored for Brunei's population and designed for future integration into national digital health infrastructure.

**Methods:** A dataset of 601,225 participants from multiple international cohorts was harmonised, incorporating demographic, lifestyle, and health variables. Predictors included age, sex, smoking status, alcohol use, BMI category, physical activity, family history, and insurance coverage. Data were divided into training (70%) and testing (30%) sets. Logistic regression, support vector machines (SVM), random forest, and XGBoost models were developed and evaluated using AUC, accuracy, sensitivity, specificity, precision, recall, and F1 score.

**Results:** XGBoost demonstrated the strongest performance (AUC 0.919, F1 0.854), outperforming random forest (AUC 0.911, F1 0.845), logistic regression (AUC 0.877, F1 0.810), and SVM (AUC 0.860, F1 0.780). Key predictors across models included physical activity, age, and BMI.

**Conclusions:** ML-based CRC risk prediction is feasible and effective for population-level screening support. Integration into Brunei's digital health platform could enable systematic triage, improve screening efficiency, and optimise colonoscopy use. External validation using local data is ongoing to ensure applicability and reduce national CRC burden.



## Feasibility of an Intervention Study Exploring the Relationship Between Nutritional Awareness and Body Image Among University Students in Brunei Darussalam

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**Background:** Feasibility assessment is a critical component of pilot studies, enabling evaluation of study procedures, participant burden, and delivery platforms prior to large-scale implementation.

**Objectives:** This pilot study assessed the feasibility of an intervention exploring the relationship between nutritional awareness and body image among university students in Brunei Darussalam.

**Methods:** The pilot study was administered online via Qualtrics to 30 university students. Participants viewed the nutrition education video and completed questionnaires assessing healthy lifestyle knowledge, attitudes, practices, and body image perception and coping. Feasibility outcomes included completion rates, technical performance, clarity of study materials and participant feedback.

**Results:** All participants completed the intervention and questionnaires, resulting in a 100% completion rate. No major technical difficulties were reported in accessing the platform, viewing the video, or navigating between survey components. Participants indicated that the questionnaires were generally easy to understand and complete. For the KAP-HLQ, internal consistency was acceptable for Knowledge ( $\alpha = .73$ ), strong for Attitude ( $\alpha = .85$ ) and moderate for Practice ( $\alpha = .63$ ). Overall internal consistency for the body image coping strategy scale was excellent (Cronbach's  $\alpha = .95$ ). At the subscale level, reliability was excellent for Appearance Fixing ( $\alpha = .95$ ), strong for Avoidance ( $\alpha = .85$ ) and Positive Rational Acceptance ( $\alpha = .86$ ). Actual and ideal body image ratings were strongly correlated ( $r = .70, p < .001$ ), supporting conceptual coherence. Minor feedback related to item wording, clarity and perceived response burden was received and small typographical and formatting issues were corrected prior to the main study.

**Conclusions:** The pilot demonstrated excellent feasibility and acceptable preliminary measurement performance, supporting readiness for large-scale data collection.



## The Prevalence of Peripheral Arterial Disease, and its Associated Sociodemographic, Risk Factors and Foot Pathologies amongst Type 2 Diabetes Mellitus Hospital-Based Patients with Diabetic Foot Ulcers in Brunei; Retrospective Analysis

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**Background:** Peripheral arterial disease (PAD) is a major manifestation of cardiovascular disease, affecting an estimated 236.62 million people worldwide in 2015. In individuals with type 2 diabetes mellitus (T2DM), PAD is frequently diagnosed late due to diabetic peripheral neuropathy, where sensory loss may mask the pain of intermittent claudication. In Brunei Darussalam, the prevalence of PAD had not been established prior to this study. Between 2017 and 2020, PAD diagnosis within the Ministry of Health relied predominantly on subjective assessment methods, contrary to current guideline recommendations advocating the inclusion of objective diagnostic measures.

**Objectives:** This study aimed to determine the prevalence of PAD and its associated risk factors, and to describe diabetic foot ulcer (DFU) characteristics among hospital-based patients with T2DM who were examined for the presence of PAD.

**Methods:** A cross-sectional study was conducted using extracted retrospective national registry data from the Brunei Diabetic Foot Registry. Data were analysed to evaluate PAD prevalence, associated sociodemographic and clinical risk factors, and DFU characteristics.

**Results:** The prevalence of PAD was 27.1%, which was lower than initially expected given the inclusion of patients with DFU. This may reflect underestimation due to reliance on subjective diagnostic methods, limited sample size, and reduced PAD awareness. PAD was not significantly associated with age, gender, occupation, nationality, body mass index, duration of T2DM, smoking status, hypertension, dyslipidaemia, microvascular or macrovascular complications, infection, or osteomyelitis. However, Charcot neuroosteoarthropathy was significantly associated with PAD ( $P < 0.001$ ). Only 12.8% of DFUs were PAD-related, with most ulcers being superficial, plantar in location, and predominantly affecting the forefoot.

**Conclusions:** PAD assessment should be routinely performed in patients with T2DM and DFU irrespective of traditional risk factors or ulcer characteristics. The findings highlight the need for objective vascular assessment and reinforce the importance of effective ulcer offloading strategies.



## Prevalence and Risk Factors Association of Low Back Pain Among Pregnant Women in Brunei Darussalam in Brunei

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**Background:** Low back pain is often considered a “normal” part of pregnancy, yet for many women it interferes with daily activities, work, and overall well-being. Despite this, pregnancy-related low back pain frequently remains under-recognized and under-treated within routine antenatal care.

**Objectives:** This study examined the prevalence, risk factor associations, functional impact, and how pregnant women manage their symptoms and seek healthcare.

**Methods:** A cross-sectional study was conducted among pregnant women attending antenatal clinics. Low back pain was assessed using a Numerical Rating Scale, while functional limitation was measured using the Oswestry Disability Index. Information on sociodemographic and obstetric characteristics, healthcare-seeking behavior, and self-management practices was collected through self-developed questionnaires. Quantitative findings were supported by descriptive qualitative responses from participants. The prevalence of LBP was calculated using proportion analysis. Associations between potential risk factors and LBP were analyzed using multivariable logistic regression, and associations between the disability measure and healthcare-seeking pattern were analyzed using Fisher’s exact test. Other additional findings were analyzed descriptively, while qualitative findings were analyzed using thematic analysis.

**Results:** A high prevalence of pregnancy-related LBP was observed among the study population. LBP was reported across all trimesters and varied in severity, with many participants describing functional limitations in daily activities. Several factors demonstrated significant associations with LBP, including selected sociodemographic characteristics and previous history of low back pain. Healthcare-seeking behavior was generally low, with many women adopting passive coping strategies.

**Conclusion:** Pregnancy-related LBP is highly prevalent and associated with multiple risk factors. These findings provide a framework to improve maternal health services. cular assessment and reinforce the importance of effective ulcer offloading strategies.



## Phytochemical Profiling, Antioxidant Capacity, and Cytotoxicity of *Leea indica* and *Cosmos caudatus*: A Comparison of Extraction Methods

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**Background:** Medicinal plants have been used globally as an alternative for the treatment and management of diseases. *Leea indica* (*L. indica*) and *Cosmos caudatus* (*C. caudatus*) are commonly found throughout Southeast Asia and consumed for their therapeutic effects. Currently, no studies have reported the antioxidant and cytotoxic activities of these plants native to Brunei Darussalam.

**Objectives:** This study investigates the phytochemical profile, antioxidant capacity, and in-vitro cytotoxic effects of local *L. indica* and *C. caudatus* leaf extracts prepared using different combinations of solvents and extraction techniques.

**Methods:** The leaves were extracted separately using three solvents (100% ethanol, 50% ethanol, and distilled water) via microwave- (MAE) or ultrasonic-assisted (UAE) extraction. The phytochemical compounds in the extracts were assessed qualitatively and quantitatively. The antioxidant capacity of these leaf extracts was measured using FRAP, DPPH, and ABTS assays. Cytotoxicity was determined using MTT assay tested against breast cancer cell lines, MCF-7 and MDA-MB-231, and colon cancer cell line, HT-29.

**Results:** For *L. indica*, the 50% ethanolic extract demonstrated the highest phenolic and flavonoid contents, and high antioxidant capacities. In *C. caudatus*, 50% ethanolic extract indicated the highest phenolic content and antioxidant capacity. However, the 100% ethanolic extract using UAE displayed the highest flavonoid content. Cytotoxicity analysis revealed that the 50% ethanolic and aqueous extracts significantly reduced HT-29 and MDA-MB-231 cell viability, whereas MCF-7 was significantly reduced by all tested extracts regardless of solvents used.

**Conclusion:** *L. indica* and *C. caudatus* leaf extracts were found to exhibit considerable antioxidant and cytotoxic activities. The study establishes that UAE using 50% ethanol provides optimal extraction for compounds exhibiting antioxidant and cytotoxic properties. Further investigations are required to explore its effects and use in traditional medicine.



## Metabolic Compensation & Redox Imbalance Following Mitochondrial Oxidative Phosphorylation Dysfunction

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**Background:** Cancer cells are metabolically flexible and can switch between oxidative phosphorylation (OXPHOS) and glycolysis or alternative energy pathways to survive under stress. Mitochondrial dysfunction disrupts energy production and redox balance, creating pressure for metabolic adaptation. While increased glucose dependence is often observed following OXPHOS impairment, it remains unclear whether this represents a predictable compensatory survival strategy or simply a transient response.

**Objectives:** This study aims to understand how cells adapt to mitochondrial stress, and where compensation succeeds or fails.

**Methods:** In vivo nematode *Caenorhabditis elegans* model was primarily used. Mitochondrial function was disrupted using OXPHOS inhibitors, including Rotenone, which is a Complex I inhibitor of the OXPHOS system. The biological consequences were evaluated through a series of functional assays, including organismal viability as an integrated readout of metabolic fitness. Viability was evaluated in OXPHOS-deficient worms under glucose-supplemented conditions, following glycolytic inhibited conditions, allowing comparison of metabolic responses across these treatments. In parallel, reactive oxygen species (ROS) levels were quantified to evaluate redox alterations associated with OXPHOS impairment and metabolic adaptation.

**Results:** Our findings suggest that mitochondrial dysfunction triggers metabolic compensation to sustain viability, but this adaptation occurs alongside persistent oxidative stress above baseline.

**Conclusion:** Collectively, the results highlight the interconnected roles of mitochondrial bioenergetics, metabolic flexibility, and oxidative stress during mitochondrial dysfunction.



## Comparative Evaluation of Extraction Techniques on Biological Properties of local *Nephrolepis biserrata* and *Rhodomyrtus tomentosa* Leaves

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**Background:** Cancer remains a global health challenge, highlighting the need to discover novel herbal medication. While *Nephrolepis biserrata* (NB) and *Rhodomyrtus tomentosa* (RT) exhibit medicinal properties, the therapeutic potential is dependent upon metabolite recovery. Extraction techniques and solvent choice determine the composition of bioactive metabolites.

**Objectives:** This study aims to investigate and compare two green extraction methods, namely Microwave-Assisted Extraction (MAE) and Ultrasonic-Assisted Extraction (UAE), using three different solvents (100% ethanol, 50% ethanol, and distilled water). Local NB and RT leaves were extracted and subsequently assessed on phytochemical content, antioxidant activity, and cytotoxicity.

**Methods:** A total of 12 leaf extracts were prepared using the aforementioned techniques. The phytochemical profiles were evaluated using Total Phenolic Content (TPC) and Total Flavonoid Content (TFC) assays. Antioxidant activity was investigated using DPPH, FRAP, and ABTS assays. Cytotoxicity on various cancer cell lines (HT-29, MCF-7, and MDA-MB-231) was determined using MTT assay.

**Results:** Data suggest that NB and RT leaves exhibited the highest TPC when extracted using 50% ethanol via both MAE and UAE. Highest TFC was recorded in 50% ethanolic MAE extract (for NB) and water UAE extract (for RT). Both extraction techniques using 50% ethanol produced extracts exhibiting the highest antioxidant activities. Only 50% ethanolic and water extracts exhibited significant cytotoxicity against all cancer cell lines.

**Conclusion:** These findings indicate that extraction technique and solvent choice can significantly affect phytochemical composition and resultant biological activity. Additional testing is ongoing to further elucidate the biological effects of these leaves.



## Evaluation Of Silver Nanogel Loaded with Micronised Activated Charcoal for Wound Healing Applications

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**Background:** This study reports experiments that aims to combine silver and activated charcoal in a gel formulation to potentially create a gel that is suitable for use in treating infected wounds and prevent wounds from being infected.

### Objectives:

- To formulate a nanogel dressing that incorporates both activated carbon and silver
- To characterize the nanogel and the related physicochemical properties
- To evaluate the in vitro antibacterial efficacy
- To test the synergistic effect of activated charcoal and silver in the wound dressing
- To determine the statistical significance in any difference between each of the tested dressings

**Methods:** Gels that were created were characterised via pH, moisture content, and spreadability analysis. Fourier Transformed Infrared (FTIR) spectrometry was used to check for the functional groups present in the formulation to ensure that the components of the gels were properly incorporated. Stability testing was tested by storing gels in different temperatures and rechecking the physical characteristics. Finally, for its antibacterial activity assessment, staphylococcus aureus ATCC 25923 strain was used to perform antibacterial studies via well diffusion assay and Minimum Bactericidal Concentration (MBC) measurement described by a previous paper.

**Results:** Stability studies showed that all physical properties of the gel generally maintained, while antibacterial effect in disc diffusion testing and minimum bactericidal concentration testing was inconclusive, with one formulation showing a significantly smaller zone of inhibition.

**Conclusions:** The gels made in this experiment seemed to not show antibacterial effect that was consistent, future studies should replace silver nitrate with silver sulfadiazine in formulation and in vivo testing should be considered.



## **Influence of Extraction Technique on Phytochemical Profiling and Biological Properties of Local *Nephrolepis biserrata* and *Leea indica* Root Extracts**

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**Background:** To overcome the adverse effects of conventional cancer therapy, increasing research has focused on exploring herbal plants as an alternative. *Nephrolepis biserrata* (NB) and *Leea indica* (LI) have been reported to contain potential bioactive compounds exhibiting cytotoxicity. To date, there is limited data on the phytochemical profile and biological properties of local NB and LI root extracts.

**Objectives:** This study evaluates the phytochemical profiles, antioxidant capacity, and cytotoxic activity of local NB and LI root extracts obtained via two green extraction techniques using three different solvents.

**Methods:** A total of 12 extracts were prepared using microwave-assisted extraction (MAE) or ultrasonic-assisted extraction (UAE) with three different solvents (100% ethanol, 50% ethanol, or distilled water). Total phenolic content (TPC) and total flavonoid content (TFC) were determined using Folin-Ciocalteu and aluminium chloride assays, respectively. Antioxidant activity was assessed using DPPH, FRAP, and ABTS assays. Cytotoxicity against breast cancer cells (MCF-7 and MDA-MB-231) and colorectal cancer cell (HT-29), was evaluated using MTT assay.

**Results:** The 100% and 50% ethanolic extracts for both plants possessed the highest TPC regardless of extraction technique. Contrastingly, TFC was the highest in 50% ethanolic extracts for both plants. Overall, 100% and 50% ethanolic extracts demonstrated the most potent antioxidant activity across DPPH, FRAP, and ABTS assays. Preliminary findings have indicated cytotoxicity in a concentration-dependent manner against the HT-29 cells.

**Conclusion:** The current data highlights the promising antioxidant activity of NB and LI root extracts potentially due to the presence of phenols and flavonoids. Studies to further understand the cytotoxic potential of these root extracts is still under progress.



## Professional Dignity Among Nurses and Nurse Managers, and Its Influence on Role Performance: A Scoping Review

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**Background:** Professional dignity (PD) is a fundamental component of nursing practice, influencing the workplace environment, well-being, and role performance. Differences in roles may shape how nurses and nurse managers experience PD. Despite its significance, PD remains underdeveloped and is often reflected indirectly through related constructs such as respect and self-worth, suggesting the concept is fragmented. A comprehensive synthesis is therefore needed to clarify how PD is understood and conceptualized.

**Objectives:** The objectives are to: (1) identify how PD is described and conceptualized among nurses and nurse managers, (2) explore workplace factors that support or undermine PD, (3) examine influence of nurse managers' PD on role performance, (4) explore the influence of nurses' PD on patient care, and (5) examine how PD manifested across roles.

**Methods:** This scoping review was guided by the PRISMA-ScR checklist and JBI Manual for Evidence Synthesis. Three electronic databases were searched. Articles were screened by one reviewer using predefined criteria and reviewed by two research supervisors to ensure rigor.

**Results:** A total of 2595 articles were retrieved, with 140 undergoing full-text screening, and 11 were included. Most included studies (90.9%) use qualitative designs, with one mixed-methods study. The majority of studies (90.9%) focused on nurses' PD, with only one study addressing nurse managers.

**Conclusions:** Research on nurses' and nurse managers' PD remains limited, implicit, and predominantly nurse-focused. The lack of studies examining both roles within a shared context limits understanding of nursing dynamics. Future research should include both roles to better understand how PD is experienced and influence one another.



## Exploring the Use of Digital Tools for Mental Well-being Post COVID-19: A Perspective from University Students in Brunei Darussalam

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**Background:** Mental health issues have been a longstanding concern. The COVID-19 pandemic and its subsequent restrictions have exacerbated these challenges. The study focuses on the usage of digital tools as a form of self-help intervention, given the significant increase in technology usage in recent years, especially post-COVID-19. Self-help digital interventions (SHDIs) can be delivered through websites, applications, chatbots, and games. Data collected from university students can advocate for a robust, accessible source of mental health support in universities after the pandemic.

### Objectives:

1. To explore students' understanding of mental health well-being and SHDIs among university students in Brunei Darussalam post-COVID-19.
2. To assess university students' perception of the effectiveness and accessibility of SHDIs.
3. To identify the factors influencing the students' decisions and the challenges faced using SHDIs for their mental well-being.
4. To identify the impact of using SHDIs on their mental well-being.

**Methods:** Descriptive qualitative research, using focus group discussions and individual interviews.

**Results:** The data collection for this study is still in progress, preliminary analyses are underway to determine emerging trends, although final results are yet to be finalized.

**Conclusions:** The purpose of the research is to help understand the significance of self-help digital interventions (SHDIs) in the provision of student mental health care within the post-pandemic context of Brunei Darussalam. By seeking to understand the perceptions and hindrances to the use of digital tools, the research will provide valuable insights to help design better digital frameworks for future development that cater to the psychological needs of the university population in Brunei Darussalam.



## Teamwork and Engagement in a multigenerational nursing workforce: a cross-sectional study of in-patient nurses in a Brunei Public Hospital

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**Background:** Nursing workforces worldwide are increasingly multigenerational, yet empirical evidence from Southeast Asian and Bruneian settings remains limited. Popular discourse often attributes teamwork challenges and engagement problems to “generational differences”, but this assumption is seldom tested.

**Aim:** To examine generational differences in teamwork-related attitudes and engagement among nurses in a Bruneian public hospital, and to identify individual, team and contextual factors associated with these outcomes.

**Methods:** A cross-sectional survey was conducted among registered nurses working in inpatient wards at a public hospital in Brunei Darussalam (final sample: N = 225). Data were collected using the Multidimensional Nursing Generations Questionnaire (MNGQ) and additional items on socio-demographic and job-related characteristics. Descriptive statistics, one-way ANOVA, Fisher’s Exact Test and multiple linear regression were performed in R.

**Results:** Generational cohorts differed significantly in Patient Safety View and Work Propensity and Availability, with older nurses reporting stronger patient safety and higher work availability than younger nurses. No meaningful generational differences were observed in conflict management, relationships, teamwork attitudes or orientation to change. In multivariable models, higher orientation to change and working in multigenerational teams were consistently associated with more favourable outcomes, whereas generational cohort was not a strong independent predictor after adjustment for covariates.

### Conclusion:

In this Bruneian public hospital, nurses across generations share broadly similar teamwork attitudes and change readiness. Workforce outcomes appear more strongly influenced by change orientation, team dynamics and the practice environment than by generational cohort alone. Nursing management should therefore prioritize supporting multigenerational teams, cultivating change-ready nurses across all ages and tailoring retention strategies—especially for younger nurses—within a supportive practice environment rather than relying on generational stereotypes.



## Qualitative Study on Awareness and Perception of Nurses on the Integration of Cultural Practice in Patient Care

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**Background:** Culturally competent care is a fundamental component of patient-centred nursing practice, particularly within multicultural healthcare systems. In Brunei Darussalam, healthcare delivery is strongly influenced by cultural values, religious beliefs, and traditional practices. Although the Nursing Board of Brunei emphasises respect for patients' cultural beliefs, there is limited empirical evidence and no standardised framework to guide nurses in integrating cultural practices into routine clinical care. This gap is further compounded by the scarcity of Southeast Asian research exploring nurses' perspectives on cultural competence in practice.

**Objective:** This study aims to explore nurses' awareness, perceptions, and experiences regarding the integration of cultural practices into patient care in government hospitals in Brunei Darussalam.

**Methods:** A qualitative exploratory design will be employed. Registered nurses working in inpatient wards across government hospitals in all four districts of Brunei will be purposively sampled. Data will be collected through semi-structured, in-depth interviews to capture nurses' understanding of culturally competent care, their clinical experiences, and perceived barriers and facilitators to cultural integration. Interviews will be audio-recorded, transcribed verbatim, and analysed using thematic analysis to identify recurring patterns and key themes.

**Results:** The study is expected to reveal varying levels of awareness and differing interpretations of cultural competence among nurses. Preliminary insights suggest that while nurses recognise the importance of cultural sensitivity, integration of cultural practices into care is inconsistent. Commonly anticipated barriers include limited formal training, time constraints, and the absence of institutional guidelines, whereas facilitators may include clinical experience, reflective practice, and organisational support.

**Conclusions:** This study will provide valuable insight into how nurses perceive and implement culturally competent care in Brunei. The findings may inform nursing education, policy development, and clinical practice, supporting the delivery of safe, inclusive, and culturally responsive healthcare.



## New Parents' expectations and experiences in Transitioning to Parenthood in Brunei Darussalam

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**Background:** Transitioning to parenthood is a significant life event that can be overwhelming, particularly for first-time parents. During this critical period, effective antenatal and postnatal health education is essential in equipping parents with the knowledge, skills, and confidence needed to navigate their new roles. However, in Brunei Darussalam, existing antenatal and postnatal education programmes have notable gaps, particularly in hands-on training and ongoing postnatal support, which may negatively affect parents' preparedness and confidence during the early stages of parenthood.

**Methods:** This study adopts a qualitative approach using a descriptive phenomenological design. Purposive sampling is used to recruit first-time parents or parents with children under one year of age from maternity and child health centres in Brunei Darussalam. Data are collected through semi-structured face-to-face and online interviews.

**Results:** Data analysis is ongoing. Preliminary review of the interview data indicates the emergence of key themes related to parents' perceived preparedness for parenthood, challenges encountered during the transition, and experiences with existing antenatal and postnatal health education. These themes are expected to provide insights into areas of strength and gaps within current educational support for new parents.

**Conclusion:** This study aims to generate context-specific evidence on new parents' experiences of transitioning to parenthood in Brunei Darussalam. The findings are expected to support improvements in culturally relevant, parent-centred antenatal and postnatal health education, contributing to enhanced maternity care and better support for new families in Brunei.



## Midwives' Attitudes Toward Adverse Event Reporting: A Scoping Review

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**Background:** Adverse events (AEs) in healthcare are challenging to discuss and report, contributing to ongoing concerns about patient safety and learning. While AE reporting has been studied across healthcare settings, less is known about how midwives perceive and engage with reporting processes.

**Objectives:** This scoping review aims to map existing literature on midwives' views and experiences of AE reporting and to identify factors influencing reporting behaviour, to support improvements in practice, education, and policy.

**Methods:** A scoping review was done on English-language peer-reviewed articles published between 2015 and 2025, using databases including PubMed, Scopus, Wiley Online Library, Cochrane Library, and Google Scholar. Three independent reviewers screened titles, abstracts, and full texts based on defined inclusion and exclusion criteria.

**Results:** Out of 228 studies identified, 7 met the final inclusion criteria. These studies, conducted in Ethiopia, Iran, Poland, and China, primarily used quantitative methods. Although midwives acknowledged the importance of reporting AEs, several barriers emerged: fear of blame, legal repercussions, reputational harm, lack of support, and unclear reporting systems. Workplace culture and rigid hierarchies further discouraged open communication. More experienced staff showed a greater willingness to report, often linked with better understanding and confidence.

**Conclusions:** Although the importance of reporting AEs is widely recognized, barriers still prevent midwives from doing so effectively. To create a safer and more transparent reporting environment, healthcare systems should implement clear, non-punitive reporting processes, provide better training on recognizing and disclosing errors, and adopt leadership practices that focus on learning from mistakes rather than blaming individuals.



## Shared Decision-Making in Women-Centered Care: Exploring Women's Perspectives in the Management of Hypertensive Pregnancy in Brunei Darussalam

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**Background:** Hypertensive disorders of pregnancy (HDP) significantly contribute to maternal and perinatal morbidity and mortality, requiring timely diagnosis and management. Despite clinical advances, care is often fragmented, with limited autonomy and inconsistent communication, creating a gap between biomedical and woman-centered care. Women with HDP frequently experience emotional distress, insufficient information, and reduced decision-making power. Strengthening shared decision-making (SDM) can improve collaboration, trust, satisfaction, adherence, clinical outcomes, and psychological well-being.

**Objectives:** To examine and assess women's experiences and involvement of decision-making during hypertensive pregnancies. To identify factors influencing satisfaction with decision-making.

**Methods:** This quantitative cross-sectional study uses a questionnaire comprising the SDM Process Scale, the researcher-developed DSET, and the MADM Scale. A total of 320–400 women with experience of hypertensive disorders during pregnancy and childbirth will be recruited from 16 government clinics nationwide.

**Results:** This research project is currently in the ethical approval phase and has not yet commenced; therefore, the results are still pending. This study will examine the effects of shared decision-making (SDM) on hypertensive disorders of pregnancy (HDP). Primary outcomes include women's level of participation in SDM and maternal clinical outcomes related to HDP.

**Conclusions:** Potentially to improve Brunei's maternal healthcare system by promoting culturally sensitive, inclusive care, reducing health disparities, and enhancing women's well-being by providing evidence to inform policy and practice while empowering women, contributing to both local and global maternal health discussions.



## Exploring postnatal women's experiences of sleep disturbance and their impact on mental health

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**Background:** Sleep disturbances in the postnatal period are common, affecting women's physical and mental health. These disturbances can be attributed to hormonal fluctuations, infant care responsibilities, and physical recovery from childbirth. These disturbances can increase vulnerability to mental health disorders like postpartum depression and anxiety, which affect a significant number of women. This research is expected to clarify how sleep problems contribute to postnatal mental health issues such as depression and anxiety and to identify common sleep challenges new mothers face, helping healthcare professionals better detect and support those at risk.

**Objectives:** To explore how postnatal women describe and make sense of their sleep experiences after childbirth and understand how disrupted sleep patterns affect emotional well-being and daily functioning of postnatal women.

**Methods:** It will utilise qualitative study, open-ended question via face-to-face interview, approximately 20 postnatal women through purposive sampling from the maternal child health clinic across the districts.

**Results:** Research is ongoing.

**Conclusions:** In summary, this research could help healthcare professionals better understand what new mothers are going through. It could lead to better training and improved care plans that support both the body and the mind. By including sleep as an important part of postpartum care, the healthcare system can better support mothers during this important time in their lives.



## Out of pocket expenditure of end stage kidney disease patients in Brunei Darussalam

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**Background:** End-stage kidney disease (ESKD) imposes substantial financial and social burdens on patients worldwide. In Brunei Darussalam, direct medical costs for ESKD are largely subsidised under the universal healthcare system for Yellow Identity Card holders. However, non-medical and indirect out-of-pocket (OOP) expenditures remain underexplored and are potentially reasons why some patients may not visit the hospital/clinic regularly.

**Objectives:** This study aims to compare sociodemographic and clinical characteristics of ESKD patients by renal replacement therapy modality, estimate direct non-medical and indirect OOP expenditures, and identify factors associated with total OOP costs.

**Methods:** A descriptive cross-sectional study will be conducted among approximately 200 ESKD patients receiving haemodialysis, peritoneal dialysis, or kidney transplantation at Rimba and Kiarong Dialysis Centres. Data will be collected using a pre-tested bilingual structured questionnaire covering sociodemographic, health status, employment, healthcare utilisation, caregiver involvement, and Out of Pocket expenditures. Data analysis for descriptive and comparative analyses will be performed using RStudio.

**Results:** Data collection is scheduled to take place from January to March 2026. Results will describe patterns of OOP expenditures across treatment modalities and identify key factors associated with higher financial burden.

**Conclusions:** This study will provide the first comprehensive assessment of OOP expenditures among ESKD patients in Brunei Darussalam and generate evidence to inform policies aimed at strengthening financial protection and support for patients in end stage kidney disease/ chronic kidney disease.



## Dietary Patterns among Older Adults in Brunei Darussalam: A cross-sectional study

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**Background:** Populations worldwide are experiencing dramatic demographic changes, including an increase in the proportion of older adults, and Brunei Darussalam is no exception. Nutrition plays a key role in promoting healthy ageing, and understanding the dietary patterns of the older adults is essential. Inadequate nutrition and unhealthy dietary behaviours, often influenced by social and economic factors, underscores the need for tailored, culturally accepted nutritional interventions. Despite the importance of diet in healthy ageing, evidence on dietary patterns among Bruneian older adults remains insufficient. This study aims to examine the dietary patterns of older adults in Brunei Darussalam and determine how these patterns may vary across different socioeconomic groups.

**Objectives:** The objectives of this paper are: 1) describe baseline characteristics including demographic, socioeconomic, health status, and anthropometric measurements of older adults ( $\geq 60$  years) in Brunei Darussalam using interviewer administered questionnaires, 2) describe the mean nutrient intake of older adults using validated food frequency questionnaires (FFQ) and compare with Recommended Nutrient Intake (RNI) guidelines for older adults, 3) describe the distribution of mean nutrient intake among older adults across different socioeconomic status, 4) estimate the association between mean nutrient intake and independent variables using simple and multiple linear regression models, and 5) identify major dietary patterns among Bruneian older adults using Principal Component Analysis (PCA).

**Methods:** A cross-sectional design will be employed to obtain baseline characteristics and dietary patterns of older adults aged 60 years and above. Participants will be recruited from multiple study sites, and data will be collected from questionnaires and validated Food Frequency Questionnaires (FFQ). Baseline characteristics will be presented as mean (SD) or median (IQR) for continuous variables, and frequencies and percentages for categorical variables. Nutritional status across socioeconomic groups will be compared using analysis of variance (ANOVA). Association between nutritional status and independent variables will be assessed using simple linear and multiple linear regressions. Distinct dietary patterns will be identified using principal component analysis (PCA).

**Expected Results:** Distinct dietary patterns, such as among older adults in Brunei Darussalam is expected to emerge using the FFQ and PCA approach, with variations anticipated across different socioeconomic statuses.

**Conclusions:** Understanding dietary patterns among older adults is essential for promoting healthy ageing in Brunei Darussalam, considering its unique food culture and socioeconomic diversity. The findings of this study can support the design of culturally appropriate interventions, inform national nutrition and health policies, and contribute to regional knowledge on healthy ageing in ASEAN countries with similar demographic and cultural contexts.

## Deep Longitudinal Representation Encoding and Comparative Machine Learning for Prognosis of Prostate Cancer Survival in Brunei Darussalam: A Retrospective Cohort Study



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**Background:** Prostate cancer prognosis is complex, and traditional survival models struggle with nonlinear, handling nonlinear interactions, high-dimensional features and time-varying variables. Artificial intelligence (AI) offers improved predictive precision, yet most existing models rely on cross-sectional datasets or clinical trial data with limited real-world applicability.

**Objectives:** The study aims to investigate existing survival patterns and develop a deep longitudinal representation encoding framework integrated with comparative machine learning and explainability model, to predict prostate cancer survival outcomes in Brunei Darussalam.

**Methods:** A retrospective cohort analyzed 212 patients over 478 longitudinal observations treated at the Brunei Cancer Centre between 2018 and 2024. Demographics, clinical, laboratory and treatment data were harmonized and validated. Missing data were imputed using Extremely Randomized Tree-based iterative imputation, followed by patient level train-test splitting, one hot encoding and Z-score standardization. A recurrent autoencoder learned latent longitudinal representations for model integration. Survival models included Cox regression, Random Survival Forests, Gradient Boosting Survival models and Deep Neural Network Survival Model. Performance was evaluated using time-dependent AUC, Harrell's C-index, integrated Brier Score. SHapley Additive exPlanations (SHAP) values was applied to enhance model interpretability.

**Results:** Mortality of 20% with median follow up of 2.25 year reported in this study with tumour-related factors, particularly advanced disease characteristics, emerged as the strongest predictors of mortality. Tree-based ensemble models outperformed all others, Gradient Boosting Survival Analysis demonstrating the best calibration (IBS:0.060), highest 1-year AUC (0.912) and maintained robust long-term performance (AUC 0.771 at 3 years; 0.783 at 5 years), with a C-index of 0.818 (95% CI: 0.564–0.975). SHAP analysis identified platelets, monocytes, tumour stage, age, and PSA as the most influential predictors, with patient-level SHAP plots providing interpretable explanations of individual risk.

**Conclusions:** Gradient Boosting Survival Analysis, supported by SHAP explainability, offered accurate and clinically interpretable survival predictions. Key predictors aligned with known prostate cancer biology, strengthening confidence in the model's clinical relevance. Future validation in larger, multi-institutional cohorts is needed before implementation in routine care.



## ASEAN Tuberculosis Incidence Trends and Future Risk: A Predictive Modelling Study towards SDG 3.3.2 by 2030.

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**Background:** Tuberculosis (TB) remains a major public health challenge across the Association of Southeast Asian Nations (ASEAN) with substantial variation in incidence across countries. Sustainable Development Goal (SDG) 3.3.2 targets an 80% reduction in TB incidence by 2030 relative to 2015 levels, yet it remains uncertain whether current trajectories across ASEAN countries are sufficient to meet this target. Furthermore, the extent to which more sophisticated forecasting models surpass simpler benchmark methodologies has not been definitively established in this context.

**Objective:** To examine TB incidence trends across ASEAN countries, compare the short-term predictive performance of forecasting models and evaluate whether projected TB incidence in 2030 is consistent with the SDG 3.3.2 target.

**Methods:** In this forecasting study, age-standardised tuberculosis incidence rates per 100,000 population, along with five prespecified covariates, were obtained from the Global Burden of Disease Study 2023 (GBD 2023) for ASEAN countries from 1990 to 2023. One-year lagged predictors were employed for forecasting, using data from 1991 to 2016 for training and data from 2017 to 2023 for testing. To compare a simple benchmark with more complex approaches, five forecasting models were evaluated: a Naive lag-1 benchmark, a standard Elastic Net, an Elastic Net with country fixed effects, a minimal Elastic Net and a Random Forest. Country-specific long-term projections to 2030 were calculated using a log-linear regression model.

**Results:** The Naive lag-1 benchmark showed the best predictive performance, with the lowest prediction errors across all evaluated models (RMSE 5.64; MAE 4.43; MAPE 3.52%). Long term projections indicated declining TB incidence in nine ASEAN countries, although not at a pace sufficient to meet the SDG 3.3.2 target, while the Philippines was projected to continue increasing (APC = +0.73%). No ASEAN country was projected to meet the SDG 3.3.2 target by 2030.

**Conclusion:** Short-term TB incidence was predicted more accurately by recent year-to-year patterns than by more complex multivariable models, and current trajectories across ASEAN countries are insufficient to meet the SDG 3.3.2 target by 2030 without substantial acceleration in TB control efforts, particularly through improved case detection and targeted interventions in high-burden settings.



## Diagnostic Pathway Mapping and Clinical Audit of Male Infertility Services in Brunei Darussalam (PHASE 1)

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**Background:** Male infertility (MI) accounts for nearly half of all infertility cases, yet men remain under-evaluated in research and clinical practice. The diagnostic reliability of semen analysis, central to MI assessment, depends on strict adherence to international standards and laboratory quality systems. Despite semen analysis being available in Brunei, key aspects of diagnostic service delivery remain poorly understood and not been systematically evaluated. This gap may contribute to delayed MI diagnosis, suboptimal management, and inefficient use of reproductive health resources.

**Objectives:** The study will reconstruct and compare MI diagnostic pathways across public and private centres, characterising referral, workflow, resources, bottlenecks, and decision points from referral to results reporting. A standards-based audit against WHO, ESHRE, and ASRM standards will assess alignment, performance, and quality, generating evidence-based recommendations to strengthen national MI services.

**Methods:** Service-level document review will include SOPs, laboratory capacity and procedures, reporting templates, quality control records, and operational documents from RIPAS Hospital and JPMC. Evidence will be interpreted using pre-defined audit indicators across core diagnostic domains for presence, adherence and consistency. Analysis and triangulation will integrate diagnostic pathway mapping, standards-based audit, operational indicators and limited contextual observations.

**Results:** The study is expected to generate the first consolidated, system-level characterisation of MI diagnostic pathways and standards alignment in Brunei, identifying procedural or structural constraints, variation, and areas of alignment or deviation from international benchmarks.

**Conclusions:** By establishing a national baseline, this study provides foundational infrastructure for subsequent research phases and actionable evidence to support diagnostic clarity and overall quality improvement, advancing Brunei's broader reproductive health agenda.



## Phytochemical Analyses of Various Local Bruneian Rice

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**Background:** Rice (*Oryza sativa* L.) is a primary staple food that contains bioactive compounds, particularly in pigmented rice varieties such as black, red, and purple rice, where the bran and germ layers are retained. Preliminary data suggests that these pigmented rice varieties possess higher levels of phenolic and flavonoid compared to non-pigmented rice. However, specific functional activities remains underexplored.

**Objectives:** This study aimed to quantitatively profile phytochemicals and quantitatively determine the Total Phenolic Content (TPC) and Total Flavonoid Content (TFC) of local Bruneian rice varieties.

**Methods:** Rice extracts were prepared using Microwave Assisted Extraction (MAE). The extracts underwent phytochemical screening followed by quantification of the Total Phenolic Content (TPC) and Total Flavonoid Content (TFC) using spectrophotometric method. Ongoing characterisation includes HPLC profiling and bioactivity assays for antioxidant capacity, cytotoxicity and wound healing potential.

**Results:** Phytochemical screening confirmed the presence of polyphenols, phenols, flavonoids, anthocyanins, tannins, quinones and saponins across the rice varieties. Quantitative analysis revealed that pigmented rice had significantly higher concentrations of TPC and TFC, with an average TPC being 48.4% higher and an average TFC being 70.8% higher than non-pigmented local varieties.

**Conclusions:** Pigmented Bruneian rice varieties exhibit superior phytochemical contents due to the retention of nutrient-rich outer layers. These findings highlight local pigmented rice varieties as a promising functional food source with potential applications in disease prevention and health promotion, particularly in relation to cancer. Future work will focus on characterizing the compounds using HPLC and evaluating of biological activities.



## Investigating The Biological Effects Of Cerumen And Propolis Of Local *Geniotrigona thoracica*

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**Background:** Cerumen and propolis from stingless bees are rich in bioactive compounds, particularly phenolics and flavonoids, associated with antioxidant, antimicrobial, and anticancer properties. However, limited data exist on products derived from local *Geniotrigona thoracica* stingless bees in Brunei Darussalam.

**Objectives:** This study aims to characterise the composition and bioactivity of cerumen and propolis from *G. thoracica* and evaluate their antiproliferative effects on human lung adenocarcinoma (A549) cells.

**Methods:** This study will extract cerumen and propolis using ethanol and analyse their carbohydrate, protein, and lipid content. Total phenolic and flavonoid content will be determined spectrophotometrically, while compound identification will be performed using HPLC and LC-MS. Antioxidant activity will be assessed using DPPH, ABTS, and FRAP assays, and antimicrobial activity will be assessed via disc diffusion. Antiproliferative effects will be evaluated using MTT assays, morphological analysis, and Western blotting of apoptosis-related proteins.

**Results:** Cerumen and propolis are expected to exhibit high phenolic and flavonoid content with significant antioxidant and antimicrobial activity. Both are anticipated to reduce A549 cell viability in a concentration- and time-dependent manner and induce apoptosis, evidenced by increased pro-apoptotic (Bax, caspase-3) and decreased anti-apoptotic (Bcl-2) protein expression.

**Conclusions:** This study will enhance understanding of the bioactive properties of cerumen and propolis from *G. thoracica* and support their potential relevance as natural sources of compounds in cancer-related research.



## From Method to Measurement: Total Phenolic Content Analysis of *Morus alba* leaf extracts

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**Background:** Phenolic compounds are important plant secondary metabolites with antioxidant properties, making their quantification essential in phytochemical studies. Total Phenolic Content (TPC) is widely used to estimate overall phenolic concentration, with the Folin–Ciocalteu (F-C) assay being the most commonly applied method due to its simplicity. However, variations in extraction solvents and assay conditions can significantly influence TPC values and limit comparison across studies. *Morus alba* (white mulberry) leaf extracts has been reported to be rich in phenolic compounds, yet inconsistencies in reported TPC values remain evident. Therefore, a clear understanding of the fundamental principles of the TPC assay is necessary to generate reliable data and accurately characterise the phenolic content of aqueous and ethanolic extracts of *M. alba*.

**Objectives:** The objectives of this study were (1) to critically examine the principles and methodological variability of the TPC assay, (2) to determine the TPC of ethanolic and aqueous extracts of *M. alba* expressed as gallic acid (GA) equivalents, and (3) compare the results with previously reported values to observe variations in phenolic content arise from biological, environmental, and methodological factors.

**Methods:** The TPC content of *M. alba* leaf extract was determined using the F-C method. Briefly, mix the sample with F-C reagent and sodium carbonate solution. The plate was incubated for 30 minutes and read using a UV spectrophotometer at 765 nm.

**Results:** GA was used as a standard, dissolved in pure water at concentrations ranging from 20 to 120 µg/mL. The extracts were tested at concentrations of 1 and 2 mg/mL, also dissolved in pure water. A standard calibration curve was plotted as a straight line ( $y = 0.0052x + 0.0189$ ) with  $R^2 = 0.9993$ .

**Conclusions:** The study highlights the methodological considerations underlying the Folin–Ciocalteu assay and confirms the presence of phenolic compounds in aqueous and ethanolic extracts of *M. alba*. This work introduces region-specific phenolic data for Bruneian ‘Kakatau’ *M. alba* and strengthens the interpretability of TPC measurements.

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## Phytochemical Profiling and Anti-urolithiatic Potential of *Morus alba* Linn Extracts: An In Vitro Study

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**Background:** Urolithiasis, characterised by urinary tract stone deposition, poses a global health issue due to its high prevalence, high recurrence rates, and treatment-associated side effects. *Morus alba* Linn leaves, traditionally used in Brunei Darussalam for kidney stone management, may offer therapeutic potential. While studies have elucidated their antioxidant, nephroprotective, and anti-inflammatory properties, the anti-urolithiatic efficacy of locally grown *M. alba* L. leaf extract remains unexplored.

**Objectives:** This study investigated the in vitro effects of locally grown *M. alba* L. leaf extracts on different stages of calcium oxalate (CaOx) stone formation. The influence of traditional and modern extraction methods on bioactive composition and efficacy was examined.

**Methods:** *M. alba* L. leaves were extracted using microwave-assisted extraction (60% aqueous methanol and 100% aqueous) and infusion (100% aqueous). Total phenolic and flavonoid contents, antioxidant capacity (DPPH, ABTS, and FRAP), and HPLC profiles of selected polyphenols were determined. Anti-urolithiatic activity was evaluated using in vitro nucleation, aggregation, and crystal growth assays. Crystal-cell binding capacity and membrane expression of CaOx monohydrate crystal-binding proteins were assessed in HEK-293 cells.

**Results:** Phytochemical content and antioxidant capacity were comparable with previous reports. All extracts variably inhibited nucleation, aggregation, and crystal-cell adhesion, with some extracts reducing crystal growth. The infusion water extract showed the strongest overall inhibition in crystallisation assays. At the cellular level, all extracts suppressed membrane overexpression of  $\alpha$ -enolase and annexin A1.

**Conclusions:** *M. alba* L. leaf extracts exert varying degrees of inhibitory effects on CaOx formation, with potential crystal-binding inhibition, suggesting its potential as a natural preventive agent against kidney stone formation.

# ABSTRACTS FOR ORAL PRESENTATION



## **Bridging Academia and Clinical Practice Through a Hybrid PBL-Digital Framework for Teaching Cardiovascular Pathophysiology**

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**Background:** Cardiovascular disease (CVD) is the leading cause of death globally, with increasing cases reported in Brunei. Traditional teaching methods, including Problem-Based Learning (PBL), often limit students' ability to visualize dynamic cardiovascular processes and retain knowledge. Digital visualization tools such as Augmented Reality (AR) and AI-based applications offer interactive learning that may enhance understanding and engagement.

**Methods:** A quasi-experimental study will be conducted among Year 2 health sciences students at University Brunei Darussalam (UBD). Participants will be engaged in hybrid PBL supported by AR and AI-based tools. Pre-test, immediate post-test, and delayed post-test (2 weeks) will assess knowledge retention. A structured questionnaire will evaluate confidence, teamwork, and perceptions. Data will be analysed using descriptive statistics and inferential tests (paired t-test/ANOVA) using R, SPSS, and Excel.

**Results:** It is anticipated that students exposed to hybrid PBL with digital tools will demonstrate improved short- and long-term knowledge retention, enhanced clinical reasoning, and higher engagement compared with performance of the baseline approaches.

**Conclusion:** Hybrid PBL integrated with digital visualization tools may enhance cardiovascular education and support the adoption of modern, effective, and interactive teaching strategies in health sciences education. The outcomes of this research are expected to benefit key stakeholders, including universities in curriculum development, students through improved conceptual understanding and clinical readiness, and hospitals by strengthening clinical training and practice preparedness.



## Integration Technology into Health Care: A Scoping Review of Digital Interventions for Adult Obesity Management

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**Background:** Digital health interventions represent a promising strategy for supporting obesity management among adults; however, evidence regarding their effectiveness, practicality, and real-world implementation remains limited.

**Objectives:** This scoping review aimed to map existing research on digital interventions for adult obesity, describing their characteristics, delivery modes, benefits, and research gaps.

**Methods:** A scoping review was conducted following Arksey and O'Malley's framework and PRISMA-ScR guidelines. Studies published between 2015 and 2025 were identified from PubMed, Google Scholar, Scopus, and APA PsycNet. Eligible studies involved digital health interventions targeting obesity in adults aged 18 years and older.

**Results:** Forty-three studies were included. Interventions focused on lifestyle education, behavioural change, dietary management, physical activity, weight goal setting, and psychological support. Delivery methods included telehealth, mobile applications, web-based platforms, and hybrid models, often supported by digital scales and wearable devices. Interventions were implemented across clinical, workplace, and community settings. Several studies reported clinically meaningful weight loss, along with improvements in metabolic and behavioural outcomes such as dietary adherence, physical activity, and self-monitoring.

**Conclusions:** Digital health interventions show considerable potential for obesity management. However, short follow-up periods and a concentration of studies in high-income settings limit conclusions about long-term effectiveness and generalisability. Future research should prioritise sustainability, equity, and scalable, culturally adapted digital models.

# **ABSTRACTS FOR POSTER PRESENTATION**

POSTER PRESENTERS	
1	<p><b>"Professional Dignity Among Nurses and Nurse Managers, and Its Influence on Role Performance: A Scoping Review"</b></p> <p><b>Nurfadhlin Najihah Haji Mohammd Yusof (25H1831)</b> Supervisor(s): Yusrita Zolkeflia, Mursidi Hj Ali</p>
2	<p><b>"Prevalence and Associated Factors of Teamwork and Collaboration Among a Multigenerational Nursing Workforce in a Public Hospital in Brunei Darussalam"</b></p> <p><b>Rahidah Ibrahim (23M8721)</b> Supervisor(s): Agong Lupat, Khadzah Binti Haji Abdul Mumin, Siti Junaiti Haji Emran</p>
3	<p><b>"Exploring the Use of Digital Tools for Mental Well-being Post COVID-19: A Perspective from University Students in Brunei Darussalam"</b></p> <p><b>Catherine Binti Abu Jahal (23M8720)</b> Supervisor(s): Agong Bin Lupat, Khadzah Binti Haji Abdul Mumin</p>
4	<p><b>"Qualitative Study on Awareness and Perception of Nurses on the Integration of Cultural Practice in Patient Care"</b></p> <p><b>Iman Haarisah Muhammad Fadil'lah (25M1831)</b> Supervisor(s): Deeni Rudita bin Idris</p>
5	<p><b>"New Parents' expectations and experiences in Transitioning to Parenthood in Brunei Darussalam"</b></p> <p><b>Amal Amirah bte Mohammad Asri (23M8741)</b> Supervisor(s): Khadzah bte Hj Abdul Mumin</p>
6	<p><b>"Midwives' Attitudes Toward Adverse Event Reporting: A Scoping Review"</b></p> <p><b>Nor Amal Hazirah Hassan (23M8742)</b> Supervisor(s): Hanif Abdul Rahman, Khadzah H, Abdul-Mumin</p>
7	<p><b>"Shared Decision-Making in Women-Centered Care: Exploring Women's Perspectives in the Management of Hypertensive Pregnancy in Brunei Darussalam"</b></p> <p><b>Nur Afiqah Binti Sanoran (25M1821)</b> Supervisor(s): Khadzah Haji Abdul Mumin, Hanif Abdul Rahman</p>
8	<p><b>"Exploring postnatal women's experiences of sleep disturbance and their impact on mental health"</b></p> <p><b>Nur Inani Syaqqah Binti Mohammad Arrifin (25M1822)</b> Supervisor(s): Hajah Sarena Binti Haji Hashim</p>
9	<p><b>"Integration Technology into Health Care: A Scoping Review of Digital Interventions for Adult Obesity Management"</b></p> <p><b>Sabah Al-Marwani (24H1851)</b> Supervisor(s):Zaidah Murang, Nik AA Tuah</p>
10	<p><b>"Out of pocket expenditure of end stage kidney disease patients in Brunei Darussalam"</b></p> <p><b>Bryan Wong Xiu Yong (21B3037)</b> Supervisor(s): Amrizal Muhammad Nur, Hjh Fazean Irdayati Idris, Mohd Ayub Sadiq@Lin Naing, Jackson Tan</p>