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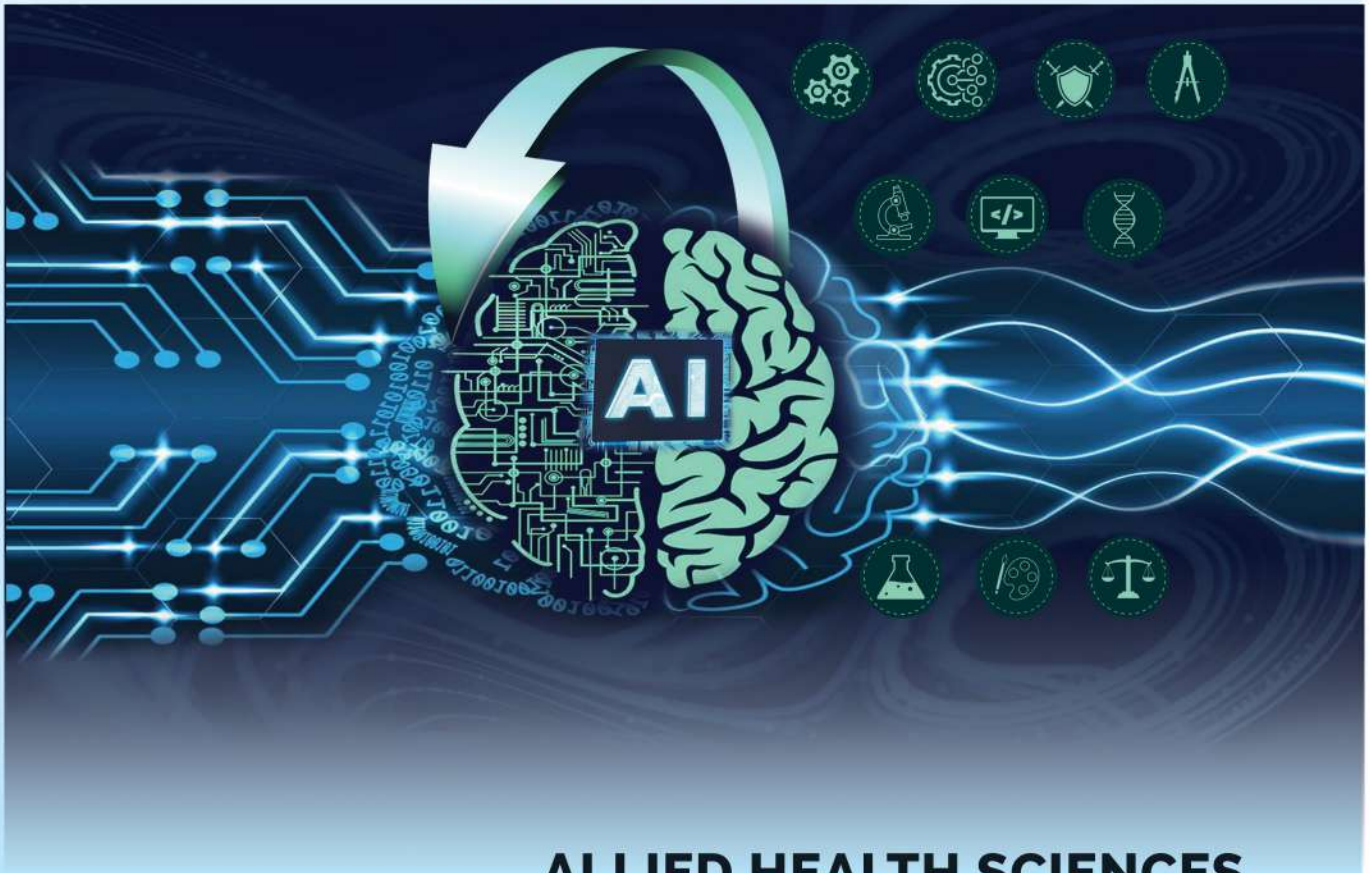
17th INTERNATIONAL RESEARCH CONFERENCE

Unravelling the Paradigm Shift: Revolutions in the Era of AI

26TH - 27TH SEPTEMBER 2024



ALLIED HEALTH SCIENCES

ABSTRACTS

General Sir John Kotelawala Defence University

17th INTERNATIONAL RESEARCH CONFERENCE

UNRAVELLING THE PARADIGM SHIFT: REVOLUTIONS IN THE ERA OF AI

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ABSTRACTS

General Sir John Kotelawala Defence University
Ratmalana, Sri Lanka.

KDU PRESS

This book contains the abstracts of papers presented at the **Allied Health Sciences** Sessions of the 17th International Research Conference of General Sir John Kotelawala Defence University, Ratmalana, Sri Lanka held on the September 26–27, 2024.

ISBN: 978-624-6427-38-2 (E Copy)

Book is typeset using LaTeX2e.

Published by
General Sir John Kotelawala Defence University,
Ratmalana, Sri Lanka.

Message from the Chief Guest

I am truly honoured to welcome all the distinguished participants to the 17th International Research Conference (IRC) at General Sir John Kotelawala Defence University (KDU). This annually organized conference serves as a unique milestone showcasing the rich research culture deeply embedded within KDU. As a prestigious seat of learning, novelty and innovation remain at the heart of KDU's mission. Therefore, 'Unravelling the Paradigm Shift: Revolutions in the Era of AI' has been chosen as the key theme of IRC 2024.

Moving ahead with the momentum of modern-day research, we are set to uncover the extensive impacts of artificial intelligence, not just in defence but across every facet of national interest. Currently, AI has become a driving force, reforming our defence strategies, transforming healthcare, and restructuring our educational frameworks and infrastructure.

Investing in research is essential for national advancement, promoting innovation, formulating policies, and offering solutions that address our most pressing challenges. Hence, the IRC serves as a vital platform that fosters such great endeavours, contributing significantly to national development. Our responsibility as defenders of national security is profound, extending beyond traditional roles to include the ethical integration of advanced technologies that ensure our nation's safety and prosperity.

KDU stands as a symbol of a rich and diverse research culture across many disciplines. It is also a hub for high-quality research, upholding international standards of academic excellence. This conference represents a critical meeting of minds where leading experts converge to define strategies for our future. Each discussion and presentation at this event is a step toward securing a thriving, prosperous future for our region.

I extend my best wishes to all for a successful and productive conference, eagerly anticipating the innovative ideas and transformative insights that will undoubtedly arise.

GENERAL SHS KOTTEGODA (Retd) WWV RWP RSP VSV USP ndc
Chancellor General Sir John Kotelawala Defence University

Message from the Keynote Speaker

Brain health is a holistic concept encompassing cognitive, sensory, social-emotional, behavioural, and motor functions, enabling individuals to achieve their full potential. With one in three people globally affected by a brain disorder, the urgency for preventive brain health initiatives is evident. Since the inception of World Brain Day in 2014, there has been a renewed global focus on this critical area. The World Federation of Neurology (WFN), in collaboration with key organizations such as the American Academy of Neurology (AAN), the European Academy of Neurology (EAN), and the Asian Regional Consortium of Headaches (ARCH), has led the charge to raise awareness and promote brain health worldwide.

This keynote address will outline the journey of World Brain Day and its impact on the global brain health movement, with a specific focus on prevention. It will explore the evolution of brain health concepts and the alarming prevalence of brain disorders, emphasizing the need for urgent, coordinated action. Central to this effort is the role of artificial intelligence (AI) in enhancing preventive brain health strategies. AI-driven technologies are increasingly being used to predict, diagnose, and monitor brain health conditions, enabling earlier interventions and more personalized approaches to prevention.

The address will highlight the author's pioneering work in community-based programs, public health campaigns, and international collaborations. It will underscore the critical role of prevention, early intervention, and AI-powered tools in improving quality of life and reducing the global burden of brain disorders. The ultimate goal is to advance comprehensive brain health initiatives that leverage cutting-edge technologies to ensure a healthier future for all.

Professor Tissa Wijeratne
DR OAM MD PhD FRACP FRCP(London) FRCP (Edin) FAAN (USA) FEAN (EAN) Professor and Chair, Director, Senior Neurologist, Department of Neurology, Western Health, Victoria, Australia Co-Founder and Co-Chair, World Brain Day, World Federation of Neurology

Message from the Vice-Chancellor

Greetings to all participants, speakers, and guests of the 17th International Research Conference (IRC) at KDU. This year's IRC is centered around a timely theme that has sparked diverse dialogues in the realms of research and innovation. The theme, 'Unravelling the Paradigm Shift: Revolutions in the Era of AI', serves as an eye-opener for both eminent and novice researchers across the globe. It also highlights the critical role that advanced technologies play in shaping our world.

At KDU, we take pride in being at the forefront of defence education in Asia, a distinction affirmed by our high rankings and our pivotal role in shaping global security dialogues. KDU claims to have a unique history of providing high-quality education for both military and civilian students. It also proudly stands as a thriving hub for cutting-edge research that addresses pressing global and national issues. We strongly believe in fostering a rich and diverse research culture among KDU's students and staff, aligned with international standards. Therefore, IRC is recognszed as a key event in KDU's annual calendar, emphasizing its significance in the institution's academic and research endeavours.

This year, we aim to explore the revolutionary impacts of AI across diverse disciplines, reaffirming our commitment to leading these discussions on a global scale. The insights shared here will undoubtedly spark new research initiatives and strategic collaborations, enhancing Sri Lanka's stature as a leader in both academic and strategic domains.

I extend my sincere gratitude to all those whose collective efforts have brought this conference to a reality. Your contributions ensure that KDU plays a prominent role in the international arena, driving discussions that will shape the future of technology and strategy. I look forward to a successful event, characterized by insightful discussions and pioneering ideas.

REAR ADMIRAL HGU DAMMIKA KUMARA, VSV, USP, psc, MMaritimePol, BSc (DS)
Vice Chancellor General Sir John Kotelawala Defence University

Message from the Chairperson

It is my honour, as the Chairperson, to welcome you all to the 17th International Research Conference at KDU. This year, we explore how artificial intelligence has evolved from a technological innovation into a catalyst for transformative change across numerous sectors. With an impressive selection of 441 research papers, drawn from nearly 1000 submissions, our conference spans across 11 distinct tracks covering a wide range of disciplines. Our theme, “Unravelling the Paradigm Shift: Revolutions in the Era of AI," highlights the profound and far-reaching transformations that AI is driving—from reshaping urban infrastructure to revolutionizing healthcare. The conference is designed to promote interdisciplinary dialogue, addressing not only technological advancements but also the ethical, social, and economic implications of these developments. One of our key objectives is to create a platform where researchers, professionals, and thought leaders can come together, exchange ideas, and foster collaborative initiatives that will push the boundaries of innovation. I am deeply grateful to all our keynote speaker and the plenary speakers, other presenters, , participants, and the entire organizing team for their tireless efforts and contributions. Your dedication to advancing knowledge is what brings this conference to life, positioning it as a critical forum in global research. Together, we are charting a path toward a future where technology and society grow hand in hand, reshaping the landscape of not just research but our daily lives. Let’s engage in meaningful discussions that will inspire new perspectives and drive impactful solutions. Here’s to a successful conference, rich in insight and collaboration. Finally, I would like to extend my best wishes to all the presenters, authors, and participants joining the KDU IRC 2024, whether on-site or online. I hope each of you finds this conference not only informative and enjoyable but also an encouraging opportunity to experience the warm hospitality of KDU throughout these two fruitful days.

Dr. Nirosha Wedasinghe
Ph.D(KDU-SL), MIT(CStud-Aus),B.Sc in Comp IS (London Met -UK), SMIEEE(US), MBSC(UK), MCS(SL), FISDS(Japan) Senior Lecturer cum Director -Centre for Gender Equity and Equality General Sir John Kotelawala Defence University Conference Chair-IRC 2024

Message from the Secretary

As we gather for the 17th International Research Conference at KDU, I extend a warm and heartfelt welcome to all participants, researchers, and thought leaders. This year, we proudly present 441 research papers selected from nearly 1,000 submissions, spanning across 11 tracks in diverse fields such as Defence and Strategic Studies, Medicine, Health Sciences, Engineering, Technology and Computing, Basic sciences, Law, Social Sciences and Humanities, and the Built Environment and Spatial Sciences. Our theme, "Unravelling the Paradigm Shift: Revolutions in the Era of AI," reflects the profound ways that AI is transforming our world, becoming integral to our lives and work. The discussions here aim to explore how AI can address global challenges, drive innovation, and foster interdisciplinary collaborations that will shape the future. Looking ahead, the future of IRC lies in broadening its horizons. We aim to increase international participation, diversify the scope of research, and establish global research consortia to tackle real-world problems that extend beyond the borders of Sri Lanka. The insights gained here must lead to actionable outcomes, particularly in formulating policy recommendations in areas such as AI in defence, public health, and education. This conference is more than just a forum for discussion; it is a platform where the brightest minds collaborate to drive change. I extend my heartfelt thanks to all our speakers and participants for their dedication and contributions. Together, we are not only shaping the future of research but also crafting solutions that will impact society on a global scale. Here's to a successful and inspiring conference that drives innovation, shapes policy, and sparks meaningful collaboration.

Dr. HM Prasanna Herath
Ph.D. (USJ), RN(SLNC), B.Sc(Nursing) Hons (UPSL), CTHE Senior Lecturer Faculty of Allied Health Sciences Erasmus coordinator General Sir John Kotelawala Defence University Conference Secretary- IRC 2024

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ORAL PRESENTATIONS

ID 74

Effectiveness of Task Specific Trunk Movement Training Exercise Protocol in Rehabilitation of Infants and Children with High Predictive Value of Cerebral Palsy: A Randomized Control Pilot Study

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Cerebral palsy describes a group of permanent disorders of the development of movement and posture, causing activity limitation that are attributed to nonprogressive disturbances that occurred in the developing fetal or infant brain. The main objective of the study was to assess the effectiveness of task specific trunk movements training on prognosis of trunk control for infants and children with high predictive value of cerebral palsy. The research design is a single blind randomized control trial. In the present study, the Task specific Trunk Movement Training (TTMT) exercise protocol was developed and its effect on improving trunk control and motor skills in infants and children with a high predictive value of cerebral palsy was evaluated. The 10 children, age between six months to 2 years were selected and randomized into a control (n=05) group and an experimental (n=05) group. The control group was provided with routine exercises and the experimental group was provided with routine exercises and TTMT exercise protocol. The intervention was provided for 3 months. At the 1st session (1st week), 2nd month and end of third month, the outcome measure (Gross motor function measure) was used by a blinded evaluator who is a physiotherapist and not an employee of the study centers. The study result showed improvement in both the groups (experimental and control). The experimental group showed a significant improvement in the 2nd month compared to the control group in Gross motor function measure scale. This suggests that the "task specific trunk movement training" is an effective exercise protocol for training trunk movements in infants and children with high predictive value of cerebral palsy.

Keywords: *task specific training, motor skills, trunk movements, gross motor functional measure scale*

ID 250

Knowledge of Cardiopulmonary Resuscitation (CPR) among Physiotherapy Practitioners in Sri Lanka according to the European Resuscitation Council (ERC) Guidelines

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Physiotherapists, as healthcare professionals, are expected to be knowledgeable in performing CPR during emergencies. The objective is to evaluate the knowledge of CPR among physiotherapy practitioners in Sri Lanka according to the ERC Guidelines. A descriptive cross-sectional study was carried out with 418 registered physiotherapy practitioners working in public and private hospitals in Sri Lanka. A pretested, self-administered questionnaire consisting of 10 questions based on ERC Guidelines was distributed online as a Google form. Respondents' mean score for the knowledge questions was 5.87 ±2.08 (range 1-10) exhibiting that more than half of the participants (63.6%) had a good to very good knowledge level of CPR. A notable 71.3% of the participants had prior CPR training, yet only 43% held a valid CPR certificate. Trained participants had shown a higher mean knowledge score (6.18 ±1.76). Forty-two percent (42%) of participants had performed CPR previously, with a high success rate (58.5%) in reviving lives. However, 22.7% of them were untrained. There were statistically significant associations between higher CPR knowledge with public hospital employment ($p=0.04$, mean knowledge score=6.03 ±1.91), working in the ICU ($p=<0.05$, mean knowledge score=7.38 ±1.12), and female gender ($p=0.01$, mean knowledge score=6.10 ±2.02). Physiotherapists who rated their CPR knowledge as effective had significantly the highest mean score ($p=<0.01$ and mean knowledge score=6.58 ±1.34). The study concluded that the majority of physiotherapy practitioners in Sri Lanka have a good to very good level of knowledge of CPR according to the ERC guidelines. Higher CPR knowledge was significantly associated with participation in CPR training, public hospital employment, working in the ICU, and female gender. These findings imply the prioritization of CPR training and certification.

Keywords: *cardiopulmonary resuscitation, European Resuscitation Council guidelines, knowledge, physiotherapy practitioners, cardiac arrest*

ID 274

The Relationship between the Foot Progression Angle and Spatiotemporal Parameters of Gait with Fall Injury Risk in People with Knee Osteoarthritis

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Osteoarthritis (OA) affects the knee joint and increases fall risk, resulting in injuries.This study evaluates the relationship between the foot progression angle (FPA) and spatiotemporal gait parameters with fall injury risk in individuals with knee OA. Conducted at the National Hospital Sri Lanka and the Rheumatology and Rehabilitation Hospital, Ragama, the cross-sectional study involved 115 participants (mean age 60.57 ± 8.04 years). Data collection included interviews, TUG, POMA, FPA assessment, nd gait analysis using Kinovea® software. IBM SPSS version 25 was used for data analysis, with Mann Whitney U tests examining associations between gait parameters and fall injury risk, and Spearman's rank correlation assessing TUG and POMA scores with age. Results showed that 22% of participants were at fall risk, with significant relationships between out-toeing FPA and fall risk ($p=0.037$). Risk of fallers exhibited higher out-toeing (18.58 ± 6.43 degrees) compared to risk of non-fallers (14.39 ± 4.03 degrees). Significant associations were found between step length, step time, stride length, stride time, stride velocity, and fall risk ($p<0.001$). Risk of fallers had shorter step lengths (45.67 ± 8.79cm vs. 59.50 ± 10.62cm) and stride lengths (89.94 ± 21.85cm vs. 119.07 ± 18.58cm), longer step times (0.74 ± 0.12s vs. 0.64 ± 0.09s), and stride times (1.47 ± 0.24s vs. 1.28 ± 0.20s) and lower stride velocity (63.96 ± 22.66cm/s vs. 96.31 ± 21.94cm/s). Additionally, the risk of fallers was older on average. The study concludes that gait abnormalities in the symptomatic knee are linked to increased fall risk emphasizing the need for targeted OA management.

Keywords: *knee OA, foot progression angle, spatiotemporal parameters, fall risk, tug test*

ID 322

Relationship between the Level of Spasticity and Activities of Daily Living during the First Year in Post Stroke Hemiplegic Patients

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Stroke is the world's second leading cause of death and third leading cause of both death and disability. Spasticity is one of the most common post stroke complications that affect activities of daily living (ADL). This study aimed to determine the relationship between level of spasticity and ADL during the first year in post stroke hemiplegic patients. A descriptive cross-sectional study was conducted with 45 post stroke hemiplegic patients from the University Hospital KDU Werahera and the Rheumatology and Rehabilitation Hospital Ragama. The Modified Ashworth Scale (MAS) and Barthel Index (BI) were used to assess spasticity and ADL respectively. Spasticity was assessed in elbow flexors, wrist flexors, finger flexors, knee extensors and ankle extensors. Most of the participants showed "1+" in both elbow flexors (n=21,47%) and wrist flexors (n=16,35.6%) while "0" in finger flexors (n=20,44%). Most of the participants reported "1" in both knee extensors (n=17,38%) and ankle extensors (n=18,40%). According to BI, an equal number of participants were reported as a majority within the ranges of 21-60 and 61-90 (n=19,42.2%), which denotes severe dependency and moderate dependency, respectively. Wrist flexor spasticity and knee extensor spasticity were significantly negatively correlated (r=-0.25, r=-0.40, n=45) with ADL. Elbow flexor spasticity, finger flexor spasticity and ankle extensor spasticity were not significantly associated with ADL. In conclusion, ADL decreases with increasing spasticity of wrist flexors and knee extensors. Therefore, early interventions are recommended to improve independence in ADL by reducing spasticity.

Keywords: *stroke, spasticity, ADL*

ID 362

Factors Affecting Exercise Adherence among Children Diagnosed with Duchenne Muscular Dystrophy (DMD) in Lady Ridgeway Hospital, Sri Lanka: A Descriptive Cross-sectional Study

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Duchenne Muscular Dystrophy (DMD) is a genetic disorder characterized by progressive muscle weakness which is typically diagnosed in early childhood. Exercise has significant benefits for children with DMD, however, adherence to exercise programs can be challenging, and identifying the factors affecting adherence can be beneficial as these are measures that can be taken to overcome them. The objective of this study was to describe the factors affecting exercise adherence among the children with DMD in Lady Ridgeway Hospital (LRH), Sri Lanka. A qualitative cross-sectional study was carried out among parents/guardians of children diagnosed with DMD in LRH, Borella. Three focus group discussions (FGD) were conducted among 24 parents/guardians of the children who are diagnosed with Duchenne Muscular Dystrophy until the saturation point was reached. Parents/guardians were divided into focus groups consisting 7 to 10 participants. Data from the FGD were transcribed into verbatim. An inductive thematic approach was used to analyse the data from the FGDs. Four themes were identified through the FGDs and they included parents'/guardians' perception on benefits and issues of exercise program, their perception on child support, their reasoning on less child support towards following the exercise program as well as suggestions and methods to improve the effectiveness of the exercise program. The study revealed that factors such as family support, parents' education,household income and transportation effect the exercise adherence of children diagnosed with DMD in Sri Lanka.

Keywords: *duchenne muscular dystrophy, children, exercise adherence, barriers*

ID 431

The Effects of Physiotherapy Management on the Gait of Post-Stroke Ambulatory Hemiparetic Patients in the Neurology Unit at the National Hospital of Sri Lanka (NHSL)

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Stroke is a major global health concern, being a leading cause of disability worldwide and the second leading cause of death. The Global Stroke Fact Sheet underlines the increasing lifetime risk of stroke, affecting one in four individuals. In Sri Lanka, the burden of stroke is on the rise, particularly among the young. Rehabilitation interventions are crucial for improving gait, balance, and the overall well-being of stroke survivors. Physiotherapy techniques such as lower limb strengthening, trunk stability training, and gait training have shown significant potential in promoting post-stroke recovery. This longitudinal study, conducted at the Physiotherapy Unit of the Neurological Institute, National Hospital of Sri Lanka, aimed to assess the impact of physiotherapy on gait among ambulatory hemiparetic patients post-stroke (Modified Rankin Scale 1-3). The study included 12 participants (58.3% male, mean age 58.6 years), using convenient sampling. Data was collected via questionnaires and the Timed Up and Go (TUG) test at three points over 4 to 5 months. Statistical analysis, including parametric and non-parametric tests, showed significant improvements in gait speed and balance over time. TUG scores decreased significantly by 13.10s and 8.10s at one and three months respectively ($p=0.005$, 0.002), indicating improved functional mobility. Age and education levels did not substantially affect TUG scores. The study concludes that physiotherapy interventions played a crucial role in improving post-stroke gait. However, it suggests further research is needed to delve deeper into the specific effects of these interventions.

Keywords: *mobility, physiotherapy, post-stroke*

ID 479

The Relationship between Cardiovascular Endurance, Body Mass Index and Quality of Life of the Post-Myocardial Infarction Patients in the Cardiology Clinic at University Hospital Kotelawala Defence University (UHKDU)

RACA Rajapakshe[1#], NRNA Nilaweera[1], DC Sooriyaarachchi[1], and GAD Perera[1]

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Since myocardial infarction (MI) is a critical public health threat in modern times, this study was conducted to investigate the relationship and improvement of cardiovascular endurance (CVE), body mass index (BMI) and health related quality of life (HRQOL) in post-MI patients, who have not undergone a cardiac rehabilitation (CR) program. Seventy non-ST-elevated myocardial infarction (NSTEMI) patients participated in this longitudinal study. CVE, HRQOL and BMI were obtained using 6 minute walk test (6MWT), a short form 36 questionnaire (SF-36), and BMI formula using stadiometer measurements. Patients were assessed twice, initially and after 2months. According to the Pearson correlation coefficient and the ANOVA test, no significant correlations were observed between CVE and HRQOL (in initial and after 2 months assessments), CVE and BMI, and BMI and HRQOL ($p>0.05$). A statistically significant positive correlation was observed between the physical component summary (PCS) and mental component summary (MCS) of HRQOL ($p=0.0001$, $r=0.691$). Paired sample t test indicated no significant differences in means of CVE and HRQOL, whilst, neither age nor gender had a significant influence according to an independent sample t test. The findings deviate from the previous studies conducted with a CR program. The participants did not exhibit significant improvements of CVE and HRQOL, or significant correlations between CVE, BMI and HRQOL. No significant differences of CVE and HRQOL were identified when stratified by age and gender. A statistically significant positive correlation was observed between PCS and MCS of HRQOL. Since neither the CVE nor HRQOL have been improved without a CR program, future studies should be directed to examine this relationship after a CR program.

Keywords: *myocardial infarction, cardiovascular endurance, body mass index, health related quality of life*

ID 20

Knowledge and Factors Influencing Self-care Behaviors of Arteriovenous Fistula among CKD Patients in Hemodialysis Units in the Jaffna Peninsula

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Chronic Kidney Disease (CKD) is a non-communicable disease, which causes progressive kidney damage and serious complications. Hemodialysis is a management method currently used worldwide to reduce or control symptoms related to CKD. Prior to the hemodialysis treatment, a proper vascular access such as Arteriovenous fistula (AV Fistula) is needed to maintain blood flow throughout the treatment. There is a lack of contemporary data on knowledge and factors on self-care behaviors on arteriovenous fistula among CKD patients who have undergone Hemodialysis in the Jaffna peninsula in Sri Lanka. The general objective of this study is to assess the knowledge and factors influencing self-care behaviors of Arteriovenous Fistula among CKD patients in hemodialysis units in the Jaffna Peninsula. Descriptive cross-sectional study was done among 155 registered CKD patients in Hemodialysis units in the Teaching Hospital Jaffna, the Base Hospital Thelippalai, the Base Hospital Chawakachchei and the Base Hospital Point Pedro in the Jaffna Peninsula. All registered patients with CKD who had undergone hemodialysis with permanent AV Fistula, over 12 years old age were included as the sample and patients with psychiatric disorders with communication barriers were excluded from the study. The study found that 68.9% of patients had adequate knowledge of self-care behaviors of AV Fistula and the rest (31.1%) of the patients belonged to the inadequate knowledge category. Finally, the results revealed that attending regular follow-up clinics were significantly associated with knowledge of self-care behavior Av fistula among CKD patients who have undergone hemodialysis.

Keywords: *chronic kidney disease, arterio-venous fistula, hemodialysis, self-care behaviors*

ID 470

Parents' Perspectives on Lifestyle Changes among Video Game-Addicted Teenagers Attending the Child Psychiatric Clinic at Colombo South Teaching Hospital, Sri Lanka

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Video game addiction among teenagers is a growing concern worldwide, with potential consequences on various aspects of their lives. This study explores the viewpoints of parents whose teenagers are undergoing treatment for video game addiction at the Child Psychiatric Clinic of the Colombo South Teaching Hospital (CSTH), Sri Lanka. A descriptive cross-sectional study with a qualitative component was carried out to investigate the parents' perspectives on lifestyle changes among video game-addicted teenagers attending the Child Psychiatric Clinic, CSTH. A purposive sampling technique was used to select the study participants and an in-depth interview method was used to collect data. Data saturation was achieved after twelve in-depth interviews. Interviews were transcribed and analysis was carried out with the thematic analysis method. The findings revealed several prominent issues observed by parents, categorized under three key themes: physical, psychological, and social-relationship changes. Opting for unhealthy snacks and fast food, neglecting balanced meals, refusing physical activities, and decreasing physical growth were found as the main physical changes observed by the parents. Sleep deprivation, daytime napping, changes in their mental status, and refusing studies were reported as psychological changes. Social isolation and decreasing social interpersonal bonds were also emphasized as parents reported a tendency among addicted teenagers to isolate themselves and to prefer spending extended periods alone, immersed in video games. The parents' perspectives highlighted the multifaceted influences of video game addiction on teenagers encompassing physical, psychological and social dimensions. These findings underscore the importance of recognizing video game addiction as a complex issue and the need for comprehensive interventions. Hence it is recommended to implement a structured daily routine that balances gaming with physical activity, social interaction, and educational tasks while actively involving affected teenagers in setting and adhering to the given guidelines for healthier lifestyles.

Keywords: *video game addiction, parents' perspectives, lifestyle changes, teenagers*

ID 497

Application of ChatGPT in Nursing Education

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The emergence and innovation of technology persistently change the Teaching-Learning process. Chat Generative Pretrained Transformer (ChatGPT), is an artificial intelligence (AI) based chatbot, with advanced text-generating skills. The study aims to identify the positive effects and pitfalls of the application of ChatGPT in nursing education. A scoping review was performed from March 2023 to June 2024 on the databases; Science Direct, Google Scholar, and PubMed, to identify the publications between 2022 and 2024. Twenty-nine articles were eligible for the study from the initial search strategy 5320. The positive effects of ChatGPT in nursing education were categorized according to the Technological Pedagogical Content Knowledge (TPCK) model. Early identification of learning needs on natural language processing, designing course materials, and crafting lesson plans were subsided under content knowledge. Personalized feedback and enhanced critical thinking were categorized under the pedagogical model and timely feedback subsided under both pedagogical and content knowledge. New insights into patient care and treatment options, and alternative learning tools to analyze large data sets were subsided under technological knowledge, continuing education and research subsided under both technological and pedagogical knowledge. Lack of humanity, limited understanding, limited creativity, lack of consistency and reliability, misinformation, and student misuse were identified as the pitfalls of ChatGPT. It is vital to integrate ChatGPT into learning-teaching platforms in nursing education. It is recommended that AI be incorporated into the curriculum to enhance the quality of nursing care with practical learning experiences. Nurse educators are advised to consider AI-powered simulation programs in the curriculum.

Keywords: *AI in nursing education, TPCK model, nursing education*

ID 517

Emotional Intelligence among the Nursing Students of Selected Nursing Educational Institutes in Sri Lanka

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Emotional Intelligence (EI) refers to the ability to recognize, understand, and effectively manage one's own emotions as well as those of others. For nurses, Emotional intelligence is essential in integrating emotional insights to enhance critical thinking and foster personal development. This study aimed to investigate the emotional intelligence levels of nursing students across selected educational institutes in Sri Lanka. A descriptive cross-sectional design was used, with EI measured using a validated self-administered Genos EI scale, comprising seven categories. The study compared EI levels of undergraduate nursing students at the University of Peradeniya (UoP) and Diploma nursing students at the Nursing Training School (NTS), Anuradhapura. Chi-square tests, independent sample t-tests, and Spearman correlation analyses were employed to examine associations, group differences, and relationships among variables, respectively. Ethical approval was granted by the Ethical Review Committee of the Faculty of Allied Health Sciences, University of Peradeniya (AHS/ERC/2022/022). The study involved 424 participants, selected via stratified random sampling: 140 undergraduates from UoP and 284 diploma students from NTS. Self-reports showed high EI levels for both groups, 67.1% of undergraduates and 57.7% of diploma students. However, significant differences in total EI scores were found ($t = 2.33$, $p = 0.02$), with undergraduates scoring higher (mean = 101.13) than diploma students (mean = 97.95). An association between the academic group and EI levels was noted ($p = 0.015$). Both groups also displayed increased EI from 1st-year to final-year students (UoP $p = 0.011$; NTS $p = 0.004$). Additionally, a weak positive correlation between EI and students' z-scores was observed ($p = 0.006$, $r = +0.14$). The results demonstrate that emotional intelligence levels vary significantly between undergraduate and diploma nursing students, with undergraduates displaying higher EI. EI increases with academic progression in both groups. Finally, while there is a connection between EI and academic performance, the relationship is modest, indicating that emotional intelligence is one of many factors contributing to academic outcomes. Therefore, integrating emotional intelligence trainings into nursing education is vital.

Keywords: *emotional intelligence, nursing students, Sri Lanka*

ID 524

Medication Adherence Behavior among Patients with Type 2 Diabetes in Selected Tertiary Care Hospitals in Central Province, Sri Lanka: A Mixed-method Study

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Diabetes mellitus is a Global Public Health burden, with Type 2 diabetes rapidly increasing. This rise adversely impacts medication adherence and health outcomes, contributing to higher morbidity and mortality rates. The main objectives of the study were to assess the level of medication adherence among patients with Type 2 diabetes and to identify barriers to medication adherence among patients with uncontrolled diabetes. An explanatory-triangulation mixed-method approach was employed. The Quantitative phase employed Stratified Random Sampling, while the Qualitative phase utilized Purposive Sampling. Ethical approval was obtained from the Ethics Review Committee of KIU University. The Brief Medication Questionnaire (BMQ) was administered to 253 diabetic patients, followed by semi-structured interviews with 18 patients with uncontrolled diabetes. In-depth interviews were conducted to explore adherence-related factors. Thematic analysis was applied to qualitative data, while quantitative data underwent descriptive and inferential analyses. A total of 37.64% of participants demonstrated complete medication adherence, while 29.94% were classified as poor. Non adherent patients had significantly higher HbA1c levels ($p = 0.021$), with a greater proportion of insulin users being non adherent ($p = 0.047$). Qualitative data revealed six themes related to perceived psychosocial barriers: (1) extrinsic factors, (2) intrinsic factors, (3) patient-related aspects, (4) attitudes toward the healthcare team, (5) use of traditional medicine, and (6) treatment-related adverse effects. Participants requested a mobile app for medication reminders and clarification. The study identified a significant number of participants with poor medication adherence. Culturally sensitive specific intrinsic and extrinsic factors were highlighted as barriers to medication adherence. Tailored counseling for diverse ethnic groups and mobile health interventions, are recommended to enhance diabetes management in Sri Lanka.

Keywords: *type 2 diabetes mellitus, medication adherence, mixed method study.*

ID 650

The Perception and Attitudes toward Abortions among Adolescents in Colombo District, Sri Lanka

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This study evaluated perceptions and attitudes towards abortion among adolescents in peri-urban areas in Colombo district, Sri Lanka. Using a descriptive cross-sectional design, the study involved 422 female school children from four MOH divisions, Piliyandala, Homagama, Boralesgamuwa, and Ratmalana. To the authors' knowledge, this is the first study in Sri Lanka focused on adolescent perspectives on abortion. Stratified random selection for schools and systematic sampling for students were used. Participants completed a self-administered questionnaire assessing socio-demographic characteristics, perceptions of abortion, parent-child communication about sexuality, understanding of abortion laws, and attitudes towards abortion. The mean age was 15±0.8. About 51.7%(n=218) had a positive perception of abortion, while 48.3% (n=204) viewed it negatively. Positive perceptions of parent-child communication about sexuality were reported by 85.3% (n=360). However, perceptions of abortion laws were mostly negative, with 59% (n=249) reporting poor perceptions and 41%(n=173) positive views. Attitudes towards abortion were predominantly favorable, with 85.3% (n=360) expressing positive attitudes. Significant positive correlations were found between perceptions of abortion and parent-child sexual communication (r=0.418, p=0.001), as well as attitudes towards abortion and both parent-child communication (r=0.211, p=0.001) and understanding of abortion laws (r=0.340, p=0.001). Critically, 28.7%(n=121) were unaware of different abortion methods, and 46.7%(n=197) did not know reliable sources of abortion information, highlighting the need for educational enhancement. The study concludes that Sri Lankan adolescents lack awareness regarding sexual and reproductive health. Improving school programs could enhance adolescents' knowledge, promoting a more informed approach to reproductive health.

Keywords: *abortion laws, adolescents, attitudes, sexual communication, perception*

ID 700

Quality of Life in Patients with Coronary Artery Disease Attending the Cardiology Clinic at the University Hospital, Kotelawala Defence University, Sri Lanka

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Coronary artery disease (CAD), significantly affects the quality of life (QoL) of patients. Investigating QoL and contributory factors is crucial for the diagnosis and management of CAD. Comprehensive assessment of QoL among CAD patients in Sri Lanka is underexplored. The study aimed to evaluate the QoL, associated factors, and correlations between domains among CAD patients at the University Hospital, Kotelawala Defence University (UHKDU), Sri Lanka. Conducted as a descriptive cross-sectional study with 343 patients aged 18-75 who had been diagnosed with CAD for over a year and were undergoing either medication or surgery, the study utilized the WHOQOL-BREF questionnaire to assess QoL and considered socio-demographic factors. The Mann-Whitney U, Kruskal-Wallis, and Spearman correlation coefficient tests were used to evaluate the associations and correlations of demographic variables and clinical characteristics with QoL measures using SPSS version 25. The mean scores for physical health, psychological health, social relationships, and environmental health were 58.93 (±14.89), 70.43 (±14.93), 59.97 (±19.27), and 69.45 (±11.87), respectively. Factors significantly impacting QOL included income levels, loneliness, changes in social activities, overall mood and emotional status, family support, relationship with family and friends, ability to perform daily activities, symptoms such as shortness of breath, and satisfaction with the care received, and it was found that revascularization procedures improved QOL compared to medical therapy ($p<0.05$). Strong positive correlations are observed between all pairs of QOL domains, all of which are statistically significant ($p < 0.01$). It is recommended that holistic patient care, addressing both medical and social needs, be emphasized to improve QoL outcomes.

Keywords: *associated factors, coronary artery disease, quality of life, Sri Lanka, WHOQOL-BREF*

ID 710

Procrastination among University Students in Sri Lanka

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Procrastination is the deliberate, unintentional or habitual postponement of tasks. This study aimed to identify the degree of procrastination, prevalent among university students in Sri Lanka and the corresponding antecedents. The targeted population was 403 students who were enrolled in different programs in public and private universities. Purposive sampling was used to select the participants. To obtain study data, this cross-sectional study utilized a structured online questionnaire while data collection was through social media. The pre-tested self-administered questionnaire comprised sociodemographic details and the statement used regarding the procrastination behavior on the five point Likert scale ranging from 'strongly agree' to 'strongly disagree'. The obtained data were analyzed with the help of the Statistical Package for the Social Sciences (SPSS V28); the level of confidence was taken to be 95%. The 50% predetermined cut-off value was used to categorize the procrastination level. The participants' sociodemographic information and their response to the procrastination statements were analyzed descriptively. Regarding the studies conducted to identify the causes of procrastination among university students in Sri Lanka., the findings reveal that the majority 97% of the students are habitual procrastinators. Notably, 38.9% often delay assignments, and 39.4% start work only when necessary. Time management challenges are evident, with 31.2% frequently arriving late and 22.7% making last-minute purchases. Seventy nine point one per cent of the students prefer submitting assignments early while, 39.4% lack a peaceful study environment at home, and 61.6% face similar issues at college. Social media distractions (39.4%) and feelings of guilt (65.2%) further exacerbate procrastination. Additionally, 54% of the students study better under stress, but 35.8% often delay tasks. 97. 15% of the students were categorized as high procrastinators and 2.5% as low procrastinators. The findings of the present study underlined the need for targeted efforts to prevent procrastination patterns among university students in Sri Lanka

Keywords: *procrastination, university students, Sri Lanka*

ID 721

Formal Carers' Perspectives towards Providing Care for Older People with Dementia in Residential Aged Care Facilities in Sri Lanka

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Formal carers in residential aged care facilities (RACF) provide care to dementia patients, aiming to improve their quality of life and promote independence. However, they may encounter challenges and barriers in their work. This exploratory qualitative study investigated the experiences of formal carers in RACF in Sri Lanka, identified the carers' needs, barriers and challenges, and explored strategies to enhance person-centered care provision for older individuals with dementia living in RACF. Formal carers caring for older people with dementia in RACF in the Kesbewa area of Colombo District, Sri Lanka were purposively selected. Data was collected, until data saturation, through in-depth interviews with 12 formal carers who had experience in providing care for people with dementia for at least six months. The data was analyzed using thematic analysis. The results consisted of 5 main themes: (1) psychological distress due to lack of emotional support and time constraints during the provision of care, (2) boundaries encountered by formal carers during care provision of dementia residents at a RACF, (3) educational and other supportive needs of formal carers to improve care provision of dementia residents at a RACF, (4) positive resilience and fulfillment of formal carers in dementia care, and (5) improving quality of care by addressing carers' working conditions and environment of the facility. The study highlights the need for comprehensive support systems and training programs for Sri Lankan formal carers to improve the quality of care for older dementia patients.

Keywords: *dementia, older people, formal carers, residential aged care facilities*

ID 737

Effect of Screen Time on Sleep Quality among Advanced-Level Students: Cross-sectional School-based Study in Colombo, Sri Lanka

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Excessive screen time is increasingly linked to poor sleep quality among adolescents. This study aims to determine the specific effects of screen time on sleep quality among advanced-level (AL) students, who are particularly vulnerable due to increased digital device use following the COVID-19 pandemic. Despite global awareness, research specific to Sri Lanka, especially post-pandemic, is lacking. This study addresses this gap by examining the relationship between screen time and sleep quality in this population. A cross-sectional study was conducted among 280 AL students from a selected school in Colombo using convenience sampling. Data on screen time and sleep quality were collected through standardized questionnaires, with sleep quality measured by the Pittsburgh Sleep Quality Index (PSQI), which is validated in Sri Lanka. A global PSQI score of 5 or higher indicated poor sleep quality. Data analysis was performed using logistic regression, chi-square tests, and Pearson correlation coefficients with SPSS 25. The sample, with a mean age of 17.70 years, revealed that 60.21% of participants experienced poor sleep quality. A significant majority reported screen time exceeding recommended limits (>2 hours/day) on both weekdays (81.7%) and weekends (81.0%). Weekday screen time was significantly associated with poor sleep quality (OR: 1.522, 95% CI: 1.080-2.144, $p = 0.016$). Higher weekday screen time was positively correlated with subjective sleep quality ($r = 0.262$, $p < 0.001$), sleep latency ($r = 0.248$, $p < 0.001$), sleep disturbance ($r = 0.252$, $p < 0.001$), and daytime dysfunction ($r = 0.315$, $p < 0.001$), and negatively correlated with habitual sleep efficiency ($r = -0.156$, $p = 0.008$). Increased screen time, particularly on weekdays, is significantly associated with poorer sleep quality among AL students. Targeted interventions to reduce screen time could potentially improve sleep quality in this population.

Keywords: *screen time, sleep quality, advanced-level students, pittsburgh sleep quality index*

ID 795

Dysmenorrhea and Associated Factors among Adolescents in Galle Zonal Education Area

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Dysmenorrhoea is a common problem in the young females throughout the world as well as in Sri Lanka. It is characterized by severe and painful cramping in the lower abdomen radiating to the back and thighs, occurring before or during menstrual periods. Primary dysmenorrhea is especially common among adolescents. Studying the associated factors can provide valuable insights for its prevention and management. This descriptive cross-sectional study was designed to assess factors associated with dysmenorrhoea among adolescent girls in the Galle Zonal Education Area. Cluster sampling technique was used to recruit 152 students from three randomly selected schools. Girls of grades 8 to 12 were invited to participate. Data were collected using a pre-tested self-administered questionnaire until the required sample size was achieved. Data were analyzed using SPSS, employing descriptive statistics and chi-square tests. Participants' age range was 12-18 years (mean 14.6 SD 2.3). Dysmenorrhea was experienced by 138 (90.3%) with moderate (n=81, 53.3%) to severe pain (n=34, 22.4%). Lower abdominal pain occurring during first 2 days of menstruation was identified as the most common symptom (n= 126, 82.9%. Dysmenorrhea was reported to have a negative influence on academic performance (n=82, 54.3%) and extracurricular activities (n=91, 59.9%). When chi-square test was used to study the associated factors, no significant associations ($p>0.05$) were found between dysmenorrhea and factors such as age of menarche, BMI, regularity of menstrual cycle, duration of menstruation, family history of dysmenorrhea, sedentary lifestyle, physical exercise, and engagement in sports or meal pattern. In this study we conclude that dysmenorrhea is common among the selected sample of adolescents, affecting their well-being, academic performances, and extracurricular activities. A multicentre study involving a large sample will be useful to identify risk factors that are modifiable.

Keywords: *adolescent girls, academic performances, associated factors, dysmenorrhoea*

ID 799

An Evaluation of Risk for Malnutrition and its Impact on Quality of Life among the Elderly Population in Battaramulla Area

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Nutrition is a vital factor for older adults, as malnutrition can significantly affect their quality of life. This study aimed to determine the prevalence of malnutrition, risk of malnutrition, quality of life, and associated factors among the elderly population in Battaramulla MOH area to underscore the importance of addressing malnutrition in enhancing the well-being of the aging population. A descriptive community-based study was conducted among 338 elderly persons aged 60 years, who attended elderly societies across 14 out of 19 Gramaniladhari divisions in the Battaramulla MOH area. Nutritional level was assessed using Mini Nutritional Assessment (MNA) questionnaire, and quality of life was assessed using the SF-36 questionnaire. Data analysis was performed using SPSS v25.0 and frequency, percentage chi square, correlation tests were conducted. ERC approval was received from KIU ERC (KIU/ERC/23/219) and further approval received from RDHS- Colombo District. Out of the 338 elderly persons, 56.21% (190) were female with a mean age of 69.77±7.712 years. The mean MNA score was 24.05 (SD±3.319). Among the participants, 201 (59.5%) had normal nutritional status (24 points), 125 (37.0%) were at risk of malnutrition (17–23.5 points), and the prevalence of malnutrition was 3.5% (<17 points). Age ($p<0.000$), income ($p<0.016$), and medical problems ($p=0.037$) were associated with the nutritional status. According to the SF-36 scores, 149 (44.1%) had a good quality of life, while 189 (55.9%) had a poor quality of life. The study revealed a strong and positive correlation ($r=0.236$, $p<0.000$) between nutritional status and overall quality of life. In conclusion, it is recommended that targeted nutritional interventions be implemented, particularly for those at risk of malnutrition, to improve their overall quality of life. Regular monitoring and support for elderly individuals with lower income and existing medical problems should also be prioritized to mitigate the malnutrition risk among the elderly population.

Keywords: *elderly persons, malnutrition, health-related quality of life*

ID 817

Understanding Quality of Life, Perceived Stress and Practices to Manage Stress among Adolescent Girls of Age 17 Years in a Selected School in Colombo

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Adolescence is a critical stage with significant stress impacting well-being, academic achievement, and mental health for girls. This study examines the quality of life, perceived stress, and stress management practices among 17-year-old girls in a leading girls' school in Colombo District. A cross-sectional descriptive study was conducted in a selected girls' school (n=418). The sample included students from A/L Science, Commerce, and Arts streams, evenly selected through simple random sampling. Data was collected using a self-administered questionnaire which included a modified version of the World Health Organization Quality of Life Assessment-BREF (WHOQOL-BREF) and perceived stress scale (PSS). Data analysis was done using descriptive and inferential statistics. Most students came from nuclear households (73.6%), with a median of one sibling (49.8%). Of the sample, 38.5% experienced high stress and 61.5% moderate stress, largely due to academic pressures and parental expectations. Significant differences in QOL scores were observed across academic streams, with Arts students reporting higher QOL across all domains ($p<0.05$). Arts students experienced the lowest perceived stress whereas commerce students reported the highest perceived stress levels ($p = 0.008$). There is a strong negative correlation ($p<0.01$) between perceived stress levels and all QOL dimensions. The majority (69.7%) of students reported occasionally engaging in stress management practices, including physical exercise, hobbies, and spending time with loved ones. However, seeking professional support services such as counselling was minimal, indicating poor awareness or stigma. The study shows poor QoL and high level of stress among students highlighting the need for targeted interventions to improve the QoL and stress management among these adolescent girls. Schools and parents should collaborate to create supportive environments that address academic pressure and provide accessible mental health resources.

Keywords: *quality of life, perceived stress, stress management practices, adolescent girls*

ID 39

Evaluation of *In-vitro* Synergistic Antibacterial Effects between *Munronia pinnata* (Bin Kohomba) Found in Sri Lanka and Commercially Available Antibiotics against Urinary Tract Infection Causing Pathogens

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Antibiotics are used to treat urinary tract infections (UTI) but their misuse and overuse lead to antibiotic resistance. Herbal plants which consist of complex chemical structures and diverse secondary metabolites can potentially reduce antibiotic resistance. In this study, synergistic antibacterial activity of aqueous extract of the whole plant of *Munronia pinnata* was evaluated with commercially available antibiotics. Antibacterial effect was performed against *Escherichia coli* (ATCC 25922), *Staphylococcus aureus* (ATCC 25923), *Pseudomonas aeruginosa* (ATCC 27853), *Klebsiella pneumoniae* (Medical Research Institute (MRI) Control), Multi Drug Resistant (MDR) Coliforms and MDR *Pseudomonas*. Gentamicin was used as a positive control. The synergistic effect between M. pinnata extraction and antibiotics (Gentamicin, Ciprofloxacin, Norfloxacin, Co- amoxiclav) was assessed using both disk and well diffusion methods. The experiment was done in triplicates and the diameter of the inhibition zone was measured and recorded. The highest antibacterial activity was shown by *M. pinnata* with an inhibition zone diameter of 15.67 ±2.89 mm against *S. aureus*. Most synergistic interaction was shown by *M. pinnata* for Norfloxacin against *P. aeruginosa*. Additive effect of *M. pinnata* was shown in combination with Co-amoxiclav. Therefore, the results showed that aqueous whole plant extract of *M. pinnata* has synergistic interactions, additive effects and in vitro antibacterial activity against *S. aureus*. Further studies are required to determine the mechanism and active compounds responsible for the antibacterial properties, synergistic and additive effects of *M. pinnata* whole plant.

Keywords: *munronia pinnata (Bin Kohomba), urinary tract infection, synergistic effect*

ID 268

Abilities of Triglyceride-Glucose-Body Mass Index and Triglyceride-Glucose-Index to Identify Dyslipidemia among the Women with Polycystic Ovary Syndrome Attending Teaching Hospital, Jaffna, Sri Lanka

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Polycystic Ovary Syndrome (PCOS) women often experience dyslipidemia. Triglyceride-Glucose-Body Mass (TyG-BMI) Index and Triglyceride-Glucose (TyG) Index might form valuable tools to identify dyslipidemia. The aim was to evaluate the efficacy of TyG- and TyG-BMI indices to identify dyslipidemia in PCOS women attending Teaching Hospital, Jaffna. This analytical cross-sectional study used a convenient sampling method. PCOS women (125nos., diagnosed by Rotterdam criteria) were selected. Total Cholesterol (TC) & Triglyceride (TG) (Enzymatic methods), HDL-Cholesterol (HDL-C) (precipitation method) and fasting plasma glucose levels (glucose oxidase method); height and weight were measured. LDL-C level, BMI, TyG- and TyG-BMI- Indices were calculated. Ethics Review Committee, Faculty of Medicine gave the Ethical approval. Elevated TG (12%, 15 nos.; >1.71mmol/L), TC (41.6%, 52 nos.; >5.18mmol/L) and LDL- C (89.6%, 112nos., 2.60mmol/L) levels were observed while 114 nos. (91.2%) had low HDL-C (1.55mmol/L) levels. Of the total women only 02 (1.6%) had normal lipid profiles and the rest 123 (98.4%) had at least one abnormal lipid parameter. The mean TyG- & TyG-BMI- Indices of the women were 8.19 (±0.47) & 230.76 (±52.86) respectively. The 112 women with elevated LDL levels showed positive correlations with TyG- (r=+0.389) and TyG-BMI-Indices (r=+0.188). The 114 women with low HDL, the TyG- (r=-0.415) and TyG-BMI Index (r=-0.332) showed negative correlations. The TyG- I and TyG-BMI-Indices could be used as valuable tools to identify dyslipidemia in PCOS women.

Keywords: *dyslipidemia, polycystic ovary syndrome, triglyceride-glucose index, triglyceride-glucose-body mass index.*

ID 667

Nasal Colonization of *Staphylococcus aureus* and *Streptococcus pneumoniae* in Preschool Children Attending Selected Immunization Clinics, Kandy, Sri Lanka

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Staphylococcus aureus colonization is frequent among Sri Lankan children. Pneumococcal carriage is a prerequisite for pneumococcal disease. This study investigated the prevalence and associated factors of *S. aureus* and *Streptococcus pneumoniae* nasal carriage in preschool children in, Sri Lanka.Both nasal swabs (NS) and nasopharyngeal swabs (NPS) were collected from 375 children aged 2-5 years, attending immunization clinics at Teaching Hospital Peradeniya and Yatinuwara MOH area. *S. aureus* from NS and *S. pneumoniae* from NPS were isolated using conventional microbiological testing. Among 375, 101 (26.9%) were colonized with S. aureus, 73 (19.5%) with *S. pneumoniae* and 21 (5.6%) with both. Among the study group, 52 (13.9%) carried only *S.pneumoniae* and 80 (21.3%) carried only *S.aureus.* Kindergarten attendance (OR=1.92, 95% CI=1.13-3.27), smokers at home (OR=1.85, 95% CI=1.04-3.30), having recent upper respiratory tract infections – (URTI) (OR=16.39, 95% CI=2.23-120.47) and, family members with URTI (OR=1.83, 95% CI=1.09-3.08) were significantly associated with pneumococcal colonization. None of the factors tested were related to *S.aureus* colonization. The median age was significantly different between co-colonized (60 months, IQR: 52.5-60) and non-co-colonized children (48 months, IQR: 36-60) (p=0.017). The median weight differed significantly between co-colonized (15.000kg, IQR: 12.450-16.475) and non-co-colonized children (13.200kg, IQR: 11.690-15.100) (p=0.021). Kindergarten attendance (OR=4.016, 95% CI=1.33-12.18) was significantly associated with co-colonization. No significant association was found between *S. aureus* and pneumococcal colonization (p=0.694). *S. aureus* and *S. pneumoniae* colonization rates were considerably higher among children aged between 2 to 5 years in Kandy, Sri Lanka. Kindergarten attendance was a significantly associated factor for the co-colonization of *S.aureus* and *S.pneumoniae.*

Keywords: *S. aureus, S. pneumoniae, colonization, co-colonization, kindergarten aged children*

ID 672

Cytotoxic Effect of *Nymphaea stellata* on a Triple-Negative Breast Cancer Cell Line

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Nymphaea stellata Willd., commonly known as water lilies, is a group of flowering plants belonging to Nymphaeaceae family. Triple negative breast cancer (TNBC), lacking oestrogen, progesterone receptors, and HER2, is one of the most invasive types of cancers with extremely challenging treatment regimes. As TNBC has proven to be difficult to treat effectively, the present study aimed to determine the activity of *N. stellata* extracts on a TNBC cell line, MDA-MB-231. Dried petals and stamens were separately extracted with hexane, chloroform, ethyl acetate, and methanol solvents using ultrasonication. The MDA-MB-231 cells were cultured in Leibovitz's L-15 Medium at 37°C and treated with the four extracts in different concentrations (400µg/mL, 200µg/mL, 100µg/mL, 50µg/mL and 25µg/mL). Sulforhodamine B assay was performed to check cytotoxicity by determining half-maximal inhibitory concentration values (IC_{50}). Only cells treated with methanolic extracts showed a distinct change in morphology when observed under a phase contrast light microscope, suggesting a possible apoptotic activity against MDA-MB-231 cells. Cells exposed to the petal methanol extract and stamen methanol extract exerted the highest cytotoxic effects with IC_{50} of 222.5 µg/mL and 232.9 µg/mL after 24 h of exposures, respectively. Whereas chloroform extracts showed slight cytotoxicity (petal: 497.5 µg/mL and stamen: 427.5 µg/mL) than their ethyl acetate extracts (stamen: 505.4µg/mL and petal: >1000µg/mL). However, Hexane extracts did not show any cytotoxic effects on TNBC cells. Overall, out of four extracts methanolic extracts of *N. stellata* exhibited cytotoxicity to TNBC cells. Therefore, methanol-based extractions of both stamens and petals could be utilized for the isolation of potential anti-cancer compounds that suppress the growth of TNBC cells.

Keywords: *triple-negative breast cancer, Nymphaea stellata, Sulforhodamine B assay*

ID 680

Prevalence of Asymptomatic Bacteriuria, and Antıbıotıc Sensitivity Patterns of Isolated Bacteria, in Patients with Cancer, Attending Trail Cancer Hospital, Tellippalai, Sri Lanka

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Cancer is one of the leading diseases worldwide. Patients with cancer are immuno-compromised and face a higher risk of infections like asymptomatic bacteriuria (ABU). In cancer patients, repeated antibiotic use can render commonly prescribed empirical antibiotics less effective. To determine the prevalence of ABU, and the antibiotic sensitivity (ABST) patterns of isolated bacteria in patients with cancer attending Trail Cancer Hospital, Tellippalai, Sri Lanka,. An institutional-based descriptive cross-sectional study was conducted. Two hundred and forty-five patients with cancer without symptoms of UTI were selected. Urine samples were collected and inoculated on CLED media. Pure growth concentrations of 105 CFU/ml or 104-105 CFU/ml were considered culture-positive. Single-organism identification is done by using relevant biochemical tests. ABST was performed on all isolated bacteria by the CLSI disk diffusion method. SPSS version 20 was used to analyze the data with statistical significance at $p < 0.05$. From 245 cancer patients, 26.5% were inpatients, and 73.5% were outpatients. 8.2% revealed significant bacterial growth. The prevalence of ASB in inpatients was 13.8% and outpatients was 6.1%. Coliforms (55%) were the most isolated uropathogen, followed by *Pseudomonas* species, Coagulase-negative *Staphylococcus, Acinetobacter* species, and *Streptococcus species.* Importantly, 20% of the identified isolates exhibited multidrug resistance (MDR). Coliforms exhibited significant resistance against Amoxicillin (63.6%), Ampicillin (54.5%), and Co-amoxiclav (45.5%). A high prevalence of ABU was identified among the inpatient population with Coliforms being the predominant uropathogen. This study suggests that Nitrofurantoin, Amikacin, Netilmicin, Meropenem, Imipenem, and Piperacillin-tazobactam are highly effective antibiotics for treating Gram-negative bacilli.

Keywords: *antibiotic sensitivity patterns, asymptomatic bacteriuria, cancer patients, prevalence*

ID 725

Population-adjusted Cut-off Enhances the Diagnostic Efficiency of Hematological Discrimination Formulae for Screening Beta-Thalassemia Trait

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Early detection of beta-thalassemia trait (BTT) is crucial for preventing and controlling beta-thalassemia. Although numerous hematological discrimination formulae (HDF) created based on the complete blood count parameters were proposed as low-cost, the diagnostic efficacy for screening BTT by rapid carrier screening tools in different populations is still controversial. Thus, the present study aimed to understand the diagnostic efficacy of HDF in screening BTT with a population-based cut-off. Data were retrospectively collected from the Thalassemia Center, Teaching Hospital Anuradhapura, and subjected to screening of BTT using HDF retrieved from the literature. Formulae that showed the best performance in both genders were selected and a population-adjusted cut-off was determined by the Receiver operative characteristic (ROC) curve analysis. The diagnostic performance was evaluated and ranked by accuracy measurements, ROC curve analysis, and Youden's index (YI). The predictive performance of each formula was ranked as 1>AUC>0.9, Excellent; 0.9>AUC>0.8, Very Good; and 0.8>AUC>0.7, Good. Results indicated that 7 out of 30 HDF in males (AUC> 0.856, YI > 0.713) and 6 discrimination formulae in females (AUC> 0.833, YI > 0.666) showed 'Very Good' performance detecting BTT with an original cut-off. The population-adjusted cut-off determination and analysis revealed that the BTT diagnostic performance of HDF was enhanced under the adjusted cut-off in both genders (males AUC> 0.891, YI > 0.782; females AUC> 0.844, YI > 0.688). Notably, Shine and Lal, Kerman-I, Nishad, Bordbar, and Roth exhibited an 'Excellent' performance among males. Overall, the findings suggested that the diagnostic performance of the HDF for screening BTT can be enhanced by using a population-adjusted cut-off.

Keywords: *beta-thalassemia trait, hematological discrimination formulae, diagnostic efficiency*

ID 771

A Preliminary Investigation on Microbial Quality of Poultry and Meat Sold near Mahargama Public Fair Premises

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In recent years, foodborne infections have become a serious concern, particularly with poultry and meat being common sources of illnesses caused by pathogens such as *Salmonella* spp. and *Escherichia coli.* Maharagama is one of the rapidly developing towns in Sri Lanka where there is high demand for the sale of poultry and meat. Poor hygienic practices of vendors and unsanitary conditions around those premises can increase food contamination. Between October 2023 to January 2024, a total of 24 samples were collected: 9 chicken, 7 beef and 8 egg samples from retail stalls and supermarkets near public fair premises. Total bacterial count (TBC) and total coliform count (TCC) analyses were performed by pour plate method to determine the microbial quality. Furthermore, *Salmonella* spp. was analysed as the reference pathogen using culture-based methods and biochemical tests. Results showed that 55.56% of chicken and 26.57% of beef samples tested positive for *Salmonella* spp., while no egg samples were contaminated. Comparing the results with guidelines from the Ministry of Health of Sri Lanka and the Sri Lanka Standard Institute (SLSI), the mean TBC (6.1×10^7/g) and mean TCC (5.3×10^6/g) for chicken, and mean TBC (4.5×10^8/g) and mean TCC (1.7×10^6/g) for beef, were found to be unsatisfactory. However, these results are not statistically significant. The study showed that vendors who practiced proper food handling and maintained proper storage facilities for chicken and beef had lower TBC and TCC values compared to those who did not follow proper food handling practices and lacked proper storage facilities.

Keywords: *salmonella spp, total bacterial count, total coliform count, pour plate method*

ID 97

Assessment of Cumulative Release and *In Vitro* Stability of Curcumin Entrapped in Polycaprolactone (PCL) and Polycaprolactone/Polylactic Acid (PLA) Blend Nanofibers

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Localized drug delivery enhances targeted treatments, especially for drugs with low bioavailability or sensitivity to temperature and pH. Nanofibers offer effective drug encapsulation and controlled release, protecting bioactivity from degradation. Curcumin, with antimicrobial, antioxidant, anticancer, and anti-inflammatory effects, holds medical promise but is limited by poor bioavailability and sensitivity. This study explores the release of curcumin encapsulated in nanocarriers made of polycaprolactone (PCL) and a PCL/polylactic acid (PLA) blend. Both polymers are biocompatible and biodegradable, and electrospinning was used to fabricate the carriers. The innovation lies in assessing curcumin's bioavailability and efficacy at lower concentrations. Encapsulated curcumin's stability was evaluated through its antioxidant activity. The loading capacity (LC) and encapsulating efficiency (EE) of curcumin in PCL/PLA blend nanofibers are higher than in PCL nanofibers, as PLA can interact more effectively with curcumin than PCL. (LC of curcumin in PCL is 25.09±4.42 mg/g, and in PCL/PLA blend is 43.67±1.30 mg/g, EE of curcumin in PCL is 64.84±13.09 %, and in PCL/PLA blend is 87.49±2.64 %). The cumulative release of curcumin from both nanocarriers under physiological conditions was examined. The maximum release occurred after 96 hours for PCL nanofibers whereas, it occurred after 23.5 hours for PCL/PLA blend nanofibers.Curcumin entrapped in PCL nanofibers showed 20.11±6.04% of maximum release compared to 23.70±4.18 % of curcumin release in PCL/PLA blend. The DPPH scavenging assay was conducted for entrapped and released curcumin from both nanofibers. The scavenging percentage of curcumin released from PCL nanofibers was 33.20 ± 8.95 %, while from PCL/PLA nanofibers was 34.15±0.53%. Hence, the experimental results prove the compatibility and suitability of using curcumin-entrapped PCL and PCL/PLA blend nanofiber mats as medical dressings.

Keywords: *electrospinning, polycaprolactone, polylactic acid, nanofibers, curcumin*

ID 349

Exploring Phytochemicals in *Glycyrrhiza Glabra* L. Root as Potential Therapeutics for Gastroesophageal Reflux Disease: A Molecular Docking and Dynamics Study

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Phytochemicals offer diverse molecular structures that can target various biological pathways, making them promising candidates as novel therapeutic agents. This study investigates the phytochemicals present in *Glycyrrhiza glabra* L. (Licorice) root as a potential alternative treatment for Gastroesophageal Reflux Disease (GERD) as the conventional therapies still provide limited therapeutic benefits with more side effects. Thirty-four major phytochemicals belonging to three secondary metabolites (flavonoids, tannins, and coumarins) were selected for virtual screening against the histamine H_2 receptor (H_2R), keeping Famotidine as the reference drug. The 3D structures of these compounds were sourced from the PubChem database and docked with H_2R (PDB ID: 7UL3) using the AutoDock Vina 1.2 docking package. Based on the docking results, selected phytochemicals and protein complexes underwent Molecular Dynamics (MD) simulations with GROMACS mimicking physiological conditions and under the CHARMM36 force field to evaluate the stability of the complexes over 100ns. Molecular docking results showed that Isoliquiritigenin 1 and Licochalcone B 80 had binding affinities of -6.0 kcal/mol and -6.4 kcal/mol, respectively, compared to -5.5 kcal/mol for Famotidine. MD simulations confirmed the stability of these complexes, with acceptable Root Mean Square Deviation (RMSD), Root Mean Square Fluctuation (RMSF), Radius of Gyration (RoG), and Solvent Accessible Surface Area (SASA) values. Additionally, the selected phytochemicals displayed favorable pharmacokinetic properties, with no violations of Lipinski's rule and favorable toxicity profiles according to SwissADME and Protox-II results. The study suggests Isoliquiritigenin 1 and Licochalcone B 80 are potential novel therapeutic agents for GERD. Yet, further *in-vitro* and *in-vivo* studies are required to confirm their efficacy and safety.

Keywords: *Glycyrrhiza glabra L., molecular docking, molecular dynamic*

ID 415

Development of an In-house Medication Adherence Assessment Tool using Barcodes and Assessing Compliance to the Tool among Young and Middle-Aged Type II Diabetic Patients in Selected Healthcare Settings

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Medication adherence is essential to providing successful medical care. Barcode based tools have been developed to track medication adherence. This study aimed to develop an in-house tool using barcodes to evaluate medication adherence among young and middle-aged diabetic patients in selected settings, assess and compare medication adherence using the in-house tool and the Morisky Green Levine Scale (MMAS-4), and assess compliance to the in-house tool among patients. The study included two phases: (i) tool development/testing and (ii) an observational study. Patients from five healthcare settings (two hospitals, three community pharmacies) were systematically sampled and followed up for four weeks to assess medication adherence after introducing the new tool. Medication adherence was assessed using the in-house tool and MMAS-4, and follow up phone calls were made to inquire about adherence on days noncompliant with the tool. Paired sample t test and Spearman's rank-order correlation test were used for statistical analysis considering a 5% significance level. Of the 500 diabetic patients approached, 97 participated. Most were male (52.3%), aged 45-59 years (75%), with 42.1% having diabetes for 1-5 years. Analysis revealed no significant difference (p=0.400), positive correlation (Spearman's rho=0.256, p=0.01) between medication adherence assessed from the in-house tool and Morisky. A significant positive correlation was obtained between medication adherence detected from an in-house tool and actual adherences based on phone calls (Spearman's rho=0.804, p=0.01). An in-house tool was developed using barcodes to assess medication adherence that is comparable in accuracy to MMAS-4 and was reasonably compliant. Future developments in the tool are needed to improve patient compliance.

Keywords: *barcodes, medication adherence assessment tool, diabetes mellitus, Sri Lanka*

ID 435

In-silico Identification of Phospholipase A2 Inhibitors from Traditional Medicinal Plants to Treat *Hypnale hypnale* envenomation

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Hypnale hypnale (HH) is one of the six highly venomous snakes in Sri Lanka, responsible for the highest rate of envenomation in the country. Despite this, no specific antivenom is available for its venom, and antivenoms raised for other snake species have proven ineffective. Currently, the symptomatic treatment is the only option available to the patients. Phospholipase A2s (PLA2s), which constitute 40% of the HH venom, are responsible for local effects and represent a key therapeutic target for new antivenoms. This *in-silico* study aimed to identify novel PLA2 inhibitors from traditional medicinal plants as potential therapeutics for HH envenomation. Due to the nonavailability of the protein structure of PLA2 from HH, closely related crystallographic structures of PLA2 from *Trimeresurus stejnegeri* (PDB ID: 4RFP) and two AlphaFold structures of PLA2 from *Calloselasma rhodostoma* (UniProt IDs: Q9PVF4 and Q9PVF2) were used. A total of 966 ligand molecules from eleven traditional medicinal plants in Sri Lanka were docked using the AutoDock Vina docking program. Binding site analysis of the proteins was performed using the PrankWeb server, and ADMET (Adsorption, Distribution, Metabolism, Excretion, and Toxicity) parameters of the phytochemicals were predicted using the SwissADME online server. According to the docking results, ellagic acid, found in *Terminalia chebula* and *Terminalia bellirica*, may have the ability to inhibit PLA2s with favourable ADMET properties. The binding energy of ellagic acid ranged from -8.6 to -7.1 kcal/mol, indicating a high affinity towards all four targets. Receptor-ligand interaction analysis through molecular dynamic simulations using the Schrodinger Desmond program showed hydrogen bond formation with all four protein targets (4RFP GLU 6 residue with 55%, Q9PVF4 TRP 22 residue with 51%, and GLU 22 residue of Q9PVF2 with 98% of the simulation period). The RMSD of 4RFP and Q9PVF2 fluctuated within an acceptable range throughout the simulation period, indicating the stability of the formed complexes. These findings suggest ellagic acid as a potential candidate for treating HH envenomation, warranting further *in vitro* and *in vivo* validation.

Keywords: *phospholipase A2 inhibitors, Hypnale hypnale, antivenom, molecular docking, molecular dynamics*

ID 511

Is Discrete Incremental Meta Docking (DIMD) the Key to Success in Molecular Docking-based Drug Discovery? A comparison of the Results of the Novel Vinca Derivative VADRPA01

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Determining the crystal structure of vinca-site inhibitors in complex with the tubulin heterodimer is crucial for understanding binding modes and guiding the design of novel microtubule inhibitors targeting the vinca binding domain. However, the lack of a universally validated methodology for dataset preparation and protein-ligand validation complicates the comparison and reproduction of docking results. The present study addresses this issue by evaluating the molecular docking results using the Discrete Incremental Meta Docking (DIMD) technique. The DIMD method facilitated the identification of the best docking pose for a novel vinblastine derivative, VADRPA01, with a binding affinity of -15.416 kcal/mol (a 47.74% enhancement) and an inhibition constant of 0.0051 nM, compared to its best rigid docking pose (-10.8 kcal/mol) obtained through a general docking procedure. Crystallized water at the vinca binding site of the native vinblastine-5J2T (tubulin) complex was found to stabilize VADRPA01 within the binding domain. Molecular dynamics studies revealed that flexible amino acid residues in the receptor binding pocket contributed to the reduction of binding energy by forming hydrogen bonds with PHE351, LYS336, ALA333, and ASN329 on the alpha chain of the tubulin heterodimer. Additionally, the calculated protein-ligand binding affinities using MMPB(GB)SA indicated a total binding energy of -27.15 kcal/mol, confirming the stability of the 5J2T-VADRPA01 complex. The optimal docking pose of VADRPA01, derived from the hydrated flexible docking procedure, showed an RMSD of 1.5020 Å compared to the native vinblastine-5J2T complex. These advancements in the docking procedure have identified the most favorable docking pose for VADRPA01, supporting further drug discovery studies of vinca derivatives.

Keywords: *vinca alkaloids, molecular docking, tubulin, DIMD, drug discovery, gmxMMPBSA*

ID 515

Analysis of Total Phenolic Content, Total Flavonoid Content, Antioxidant and Anti-inflammatory Activities of *Halymenia sp*

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Marine algae have garnered significant interest due to their rich bioactive compound profiles and potential pharmaceutical applications. This study aimed to investigate the total phenolic content (TPC), total flavonoid content (TFC), *in vitro* antioxidant and anti-inflammatory activities of the crude extract of *Halymenia sp.* The crude extract was obtained via ultrasound sonication using a methanol: chloroform mixture (4:6). The TPC, TFC, and antioxidant activity were determined using the Folin-Ciocalteu method, aluminum chloride colorimetric method, 1,1-diphenyl-2-picryl-hydrazyl (DPPH), oxygen radical absorbance capacity (ORAC), and ferric reducing antioxidant power (FRAP) assays, respectively. The anti-inflammatory activity of the crude extract was determined using egg albumin and bovine serum albumin denaturation assays. All the assays were triplicated and the results were expressed as mean ± standard deviation. The TPC and TFC values of the crude extract were 51.70 ± 2.51 mg of Gallic acid equivalent/g of dried extract and 11.65 ± 1.30 mg of Quercetin equivalent/g of dried extract, respectively. The DPPH (IC_{50}), FRAP and ORAC values were 4.301 ± 0.797 µg/mL, 72.71 ± 2.40 mg of Trolox equivalent/g of dried extract, and 17.36 ± 1.09 mg of Trolox equivalent/g of dried extract, respectively. Additionally, the anti-inflammatory activity of the *Halymenia sp.* was 35.47 ± 2.55 mg diclofenac sodium equivalence /g of dried extract in egg albumin denaturation assay and 27.36 ±10.058 mg diclofenac sodium equivalence /g of dried extract in bovine serum albumin denaturation assays. The results indicated that the extract of *Halymenia sp.* is rich in phenolic compounds, flavonoids, antioxidants and compounds with anti-inflammatory properties.

Keywords: *Halymenia sp., antioxidant, anti-inflammatory, flavonoids*

ID 557

Synthesis and Characterization of Nano-formulations of Gallic Acid, Vanillin, and Quercetin to Enhance Antibacterial Activity

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Recently, the misuse of antibiotics has led to the developement of resistance against many synthestic antibiotics in pathogenic bacteria, necessitating alternative approaches like the development of novel antibiotics using natural sources. However, many phytochemicals have not shown expected activity due to their hydrophobicity, poor absorption and their large size. The present study aimed to synthesis nanoparticals of three pure phytochemicals: gallic acid, vanillin, and quercetin in order to improve their antibacterial activity. Nanoparticles of selected bioactive compounds were synthesised by the nanoprecipitation method using polyvinylpyrrolidine and alginate as stabilizers. The antibacterial potential of pure compounds and nanoparticles was assessed against *Escherichia coli* and *Staphylococcus aureus* by the agar-well diffusion method and the micro broth dilution method. Scanning Electron Microscopic images indicated that the size of the procuded particals ranged between 100 and 200 nm confirming the sysnthesis of nanoparticals. Notably, among the nano formulations, polyvinylpyrrolidine-coated gallic acid had the highest zone of inhibition against E. coli (0.67 ± 0.12 cm) in agar-well diffusion assay. Importantly, when compared with pure Gallic acid (100 $mgmL^{-1}$), nano-formulation had reduced minimum inhibitory concentrations agaisnt both *S. aureus* (84.37 $mgmL^{-1}$) and *E. coli* (63.28 $mgmL^{-1}$). Sodium alginate-coated gallic acid demonstrated significant efficacy against both *E. coli* and *S. aureus*, showcasing its potential as an antibacterial agent. The present study reveals that synthesis of nanoparticals with using certain stabilizers enhances the antibacterial activity of natural physochemicals, paving the way for future development of novel anti-bacterial agents.

Keywords: *nanoparticles, antibacterial activity, gallic acid, vanillin, quercetin*

ID 797

Anticancer Drug Handling Practices among Oncology Pharmacists in Sri Lanka: A Cross-sectional Study

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Oncology pharmacists play a vital role in handling cytotoxic drugs including the reconstitution of cytotoxic drugs. This study assessed the practices of oncology pharmacists in Sri Lanka. A descriptive cross-sectional study was conducted among oncology pharmacists (50) at Cytotoxic Reconstitution Units (CRU) in 21 Government Hospitals in Sri Lanka. A validated self-administered questionnaire was used to collect data. Descriptive statistics were calculated using IBM SPSS (Version 25) software. The ethical approval was obtained from the Ethics Review Committee at the Open University of Sri Lanka. The majority of pharmacists were males (96%, n = 48). Most pharmacists (78%, n = 39) had a Certificate of Proficiency in Pharmacy and had over 5 years of experience working as hospital pharmacists (78%, n = 39). The majority of the pharmacists (86%, n = 43) had received formal training in handling anti-cancer drugs. Standard Operating Procedures (SOP) for handling anti-cancer drugs were used by 78% (n = 39) of participants. More than half of the participants responded that they were using different sources such as clinical plans (86%, n = 43), Bed Head Tickets (78%, n = 39), previous prescriptions (84%, n = 42), and discussions with other healthcare professionals (80%, n = 40) and patients (56%, n = 28) to ensure the accuracy of the prescription. Almost all the pharmacists (96%, n = 48) were using product information leaflets when carrying out volume dilution of anticancer medicines. The majority of the pharmacists (96%, n = 48) packed the anticancer drug waste in sealed packets with hazard symbols. This study concludes that oncology pharmacists at government hospitals had good practices for handling anticancer drugs. The provision of periodical training, necessary facilities, and regular monitoring is recommended to uplift the skills.

Keywords: *practices, anticancer drugs, pharmacist, oncology, cytotoxic*

ID 126

Classification of Non-Small Cell Lung Carcinoma using Computer Aided Semi-automatic Segmentation and Radiomics

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Among lung cancers, adenocarcinoma (AD) and squamous cell carcinoma (SCC) are common types and significantly contribute to global cancer-related mortality. This study aimed to classify these types by analysing radiomic features extracted through computer-aided semi-automatic segmentation. The 3D Slicer software was used to pre-process, segment, and extract 107 quantitative radiomic features from each segmented tumour region in 80 subjects. In the first stage of feature selection, features with a correlation coefficient less than 0.9 were selected. In the second stage, the LASSO binary logistic regression algorithm was applied, resulting in 15 features with non-zero coefficients which were then used to develop the radiomic score. A statistically significant difference in radiomic scores was observed between two groups. The discriminatory performance of the radiomic score was evaluated using receiver operating characteristic (ROC) curves, resulting in an area under the curve (AUC) of 0.679 (95% CI, 0.541-0.871) for the training set and 0.560 (95% CI, 0.342-0.778) for the validation set. Machine learning algorithms of Random Forest (RF) and Support Vector Machine (SVM) were compared for their ability to differentiate between AD and SCC. RF achieved an accuracy of 0.73 (95% CI, 0.54-0.88) with an AUC of 0.54, while SVM demonstrated an accuracy of 0.87 (95% CI, 0.69-0.96) and an AUC of 0.87. The findings emphasize the potential of radiomic analysis for differentiating between AD and SCC. SVM algorithm shows particularly strong discriminatory performance. The study suggests that further validation of these results could be achieved by exploring larger datasets and incorporating additional features.

Keywords: *lung cancer, computed tomography, radiomics, machine learning, tumour segmentation*

ID 149

Characterization and Classification of Structural Brain Changes in Generalized Epilepsy using Region based Morphometry

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This study hypothesized that different structural metrics have different potential to classify patients with generalized epilepsy and healthy subjects. Therefore, the present study characterized regional structural brain changes in generalized epilepsy and tested the potential of different metrics in classification of patients and healthy subjects. Patients (45) and healthy subjects (46) were scanned using a 3 Tesla MRI scanner. 3D T1 weighted images were pre-processed, and structural metrics were computed using Computational Anatomical Toolbox (CAT12). Univariate analyses were performed using two sample t-tests and multivariate pattern analyses (MVPA) were conducted using linear support vector machine (SVM). GM volume reductions were detected in cerebellum, frontal, temporal lobes, thalamus, and hippocampal. WM volume reductions reported in cerebellum and CSF volume increments in left lateral ventricle were detected. Reduced regional gyrification was detected in left posterior ramus of the lateral sulcus and reduced sulcal depths were detected in occipital pole, cuneus, and posterior ramus of the lateral sulcus in patients. MVPA revealed different discriminative abilities in classifying patients with generalized epilepsy and healthy subjects (Classification accuracy: 61.1%, 62.2%, 58.8%, 61.1% and 60% for GMV, WMV, CSFV, Cortical gyrification and sulcal depth respectively). However, the above low accuracies may not be potentially useful to distinguish patients and healthy subjects clinically and therefore further studies are encouraged using different classification strategies, large sample sizes and well categorized patients with medication levels for improved results. In conclusion, this study provides an understanding of regional structural brain changes associated with generalized epilepsy and their potentials in classification of patients and healthy subjects.

Keywords: *generalized epilepsy, magnetic resonance imaging, structural brain changes, region based morphometry, univariate statistical analysis, multivariate pattern analysis*

ID 192

Evaluation of the Level of Knowledge and Awareness of Radiation Protection among Radiation Therapists in Sri Lanka.

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Radiation therapists are exposed to ionizing radiation during treatments making it essential for them to understand and apply radiation protection principles to safeguard their health. Inadequate training or knowledge can lead to unsafe practices and increased exposure risks. This study aims to assess knowledge and awareness on radiation protection among radiation therapists in Sri Lanka, identify existing knowledge gaps, and guide targeted training to enhance safety protocols and improve care quality. A descriptive cross-sectional study was conducted to analyze characteristics and factors associated with radiation therapists. Data waswere summarized by frequency and in terms of mean and standard deviation, and normality was assessed using the Kolmogorov-Smirnov test. Non-parametric tests, namely Spearman's correlation and Kruskal-Wallis H-test were used for statistical analysis since the data did not follow normal distribution. The criterion for statistical significance was set at a p-value less than 0.05. The study included a sample size of 91, from which 52 responses were successfully collected. The Kruskal-Wallis test showed significant differences in general radiation protection knowledge ($p = 0.03$) and the total score of knowledge and awareness of radiation protection based on educational qualifications ($p = 0.05$). However, no significant differences were found in the mean rank scores of radiation protection knowledge related to working experience ($p > 0.05$). This study verified that the overall score of knowledge and awareness on radiation protection among radiation therapists in Sri Lanka was quite satisfactory.

Keywords: *radiation therapists, radiation protection, safety practices, treatment doses*

ID 647

An Assessment of Occupational Radiation Exposure in Cardiac Catheterization Laboratory at a Single Centre in Sri Lanka

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In a cardiac catheterization laboratory, the risk of continuous radiation exposure, which may affect both patients and staff personnel, is a significant concern. The main purpose of this study was to determine the level of radiation exposure to the first operator, a senior registrar who performs cardiac catheterization procedures, and the scrub nurse who assists during the cardiac catheterization procedures. The study conducted at the National Hospital of Sri Lanka included 202 procedures: 151 coronary angiograms (CAG) and 51 Percutaneous Coronary Intervention (PCI) procedures. Each person used two electronic pocket dosimeters (EPDs), with one placed under the apron at chest level and the other above the apron at neck or collar level. Annual procedure counts were obtained from hospital records in 2023. Effective doses were calculated based on EPD readings. Patient demographics (height, weight) and C-arm dose reports were recorded. The effective dose per year was calculated. Statistical correlations between effective dose, demographics, and procedural elements (fluoroscopy time, Air Kerma, Dose Area Product (DAP), cine acquisitions) were analyzed by considering operator experience levels. The average effective dose for the first operator was 0.08 mSv ± (0.02 mSv) while the average effective dose for the scrub nurse was 0.05 mSv ± (0.01 mSv). The individual estimated annual effective doses as well as the average annual effective doses for both first operator and the scrub nurse were well below the occupational average annual dose limit of 20 mSv as per the ICRP recommendations. Significant correlations were found between effective dose and the procedural factors like DAP, Air Kerma, cine acquisitions, fluoroscopy time, and operator experience.

Keywords: *occupational radiation exposure, cardiac catheterization laboratory, coronary angiograms, percutaneous coronary intervention procedures*

ID 688

Institutional Diagnostic Reference Levels for Non-Contrast Computed Tomography Examinations of Adults at Sri Jayewardenepura General Hospital, Sri Lanka.

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The computed tomography (CT) scanner is considered a major imaging modality which utilizes ionizing radiation in medical imaging. Diagnostic reference levels (DRLs) have been employed to prevent patients from receiving unnecessary radiation doses. This study was aimed to determine institutional diagnostic reference levels (IDRLs) for four non-contrast CT (NCCT) examinations at Sri Jayewardenepura General Hospital, Sri Lanka based on DRL quantities such as volume computed tomography dose index ($CTDI_{vol}$), dose length product (DLP), and size-specific dose estimate (SSDE). 310 adult patients between the age of 18-80 years who underwent CT scans of NCCT brain, chest, abdominopelvic, and Kidney-Ureter-Bladder (KUB) examinations were included. Dosimetric data such as $CTDI_{vol}$, and DLP were retrospectively collected. Anteroposterior (AP) and lateral diameters were obtained from the mid-slice of the axial CT images for each patient for SSDE calculation. The AAPM reports 204 and 220 were followed in obtaining effective diameter (D_{eff}) and the conversion factors required for SSDE calculation. IDRLs were determined as the median of distribution of $CTDI_{vol}$, DLP, and SSDE for NCCT brain (n=110, 91.30 mGy, 1852.70 mGy.cm, 90.42 mGy), chest (n=50, 8.60 mGy, 288 mGy.cm, 12.46 mGy), abdominopelvic (n=100, 32, 11.40 mGy, 555.50 mGy.cm, 15.32mGy), and KUB examinations (n=50, 12.70 mGy, 597.10 mGy.cm, 16.60 mGy). The preliminary data provided by this study can be used for optimization of these CT examinations in the hospital. Adding SSDE to the CT systems is important in determining the radiation dose received by the patients according to their dimensions. Further studies can be recommended with increased sample size.

Keywords: *computed tomography, institutional diagnostic reference levels, volume computed tomography dose index, dose length product, size-specific dose estimate*

ID 703

Evaluation of Inter-fractional Geometric and Dosimetric Variations in Gynaecology Brachytherapy based on C-arm X-ray Images in Carcinoma of Cervix at Apeksha Hospital Maharagama

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Treatment reproducibility is a key aspect of accurate radiotherapy to achieve better target coverage and normal organ sparing. Uniform protocols for these procedures should be maintained to achieve this. Partial coverage of the target leads to recurrence of the tumour and over exposure of organs at risk (OAR) results in severe complications. Therefore, close consideration of the doses and volumes during the planning process and consideration of inter-fractional treatment variations are essential to minimize such complications. The aim of this study is to assess the relationship among inter-fractional technical, geometrical, and dosimetric variations and to determine the causes for these variations in gynaecology brachytherapy for carcinoma of cervix. A total of 211 subjects who had completed High Dose Rate (HDR) brachytherapy between January 2022 and January 2023 at Apeksha Hospital Maharagama were selected for this study. Data were obtained from the logbook and daily dose profile which were available in the HDRplus 3.0 software. The data included treated volumes, delivered doses, number of activated dwell points, applicator distances and number of packs utilized. The data was further analysed using the IBM Statistical package for the social sciences (SPSS) statistics software (version 28.0). According to the results, correlations between treated volume variations and applicator variations are mostly significant, and the correlation with tandem is highly significant. Correlations between bladder dose variations and applicator variations are mostly insignificant while the correlations between rectal dose variations and applicator variations are totally insignificant. The relationship between dosimetric variations of both the bladder and the rectum are highly significant with the variations in the number of gauze packs utilized inter-fractionally. In conclusion, geometric variations were predominantly affected by applicator variations of the tandem while bladder and rectal doses were less affected by applicator variations and were mostly affected by gauze packs.

Keywords: *radiotherapy, high dose rate brachytherapy, treated volume, bladder dose, rectal dose, gauze packs, applicators.*

ID 731

Comparison of Gate's GFR in ^{99m}Tc-DTPA Scintigraphy and Creatinine-based Estimated Glomerular Filtration Rate (GFR) among Chronic Kidney Disease (CKD) Patients in Sri Lanka

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Chronic Kidney Disease (CKD) presents a growing health challenge globally with a notable increase in prevalence in Sri Lanka, particularly in the North Central and Uva Provinces. Accurate estimation of Glomerular Filtration Rate (GFR) is crucial for diagnosing and managing CKD, but the validity of existing methods within the Sri Lankan context requires further investigation. This study evaluates the correlation between the 99^{99m}Tc-DPTA scintigraphy method and the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) method for GFR estimation. The study was conducted retrospectively at Lanka Hospital, Colombo, from January 2021 to December 2023, focusing on CKD patients aged 18 and above. A total of 128 sample reports were selected from a database containing over 12,000 99^{99m}Tc-DPTA scintigraphy studies. The imaging was carried out using the Siemens E-Cam Dual Detector Single Photon Emission Computed Tomography (SPECT) gamma camera and the GFR was calculated by Gates algorithm. Bland-Altman analysis revealed substantial variability between the methods with a bias towards the Gates method. Weak negative correlation was observed between GFR deviation and age, while serum creatinine showed a positive correlation and gender showed no significant association. For individuals with GFR > 90 mL/min/1.73m^2, good concordance was noted. These findings highlight that while Gates method tends to produce higher GFR values, particularly in CKD patients, reliance solely on this method is not recommended. The study underscores the need for a comprehensive approach to GFR estimation to improve diagnostic accuracy and treatment efficacy in the Sri Lankan population.

Keywords: *chronic kidney disease, ^{99m}Tc-DTPA, chronic kidney disease epidemiology collaboration, glomerular filtration rate calculation, gates method*

POSTER PRESENTATIONS

ID 12

Development of a Norm Table and a Device for a Six-Corner Agility Test for Age between 16 to 19 Badminton Players in Sri Lanka

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The fast-paced indoor racket sport of badminton requires great agility, accuracy, and strategic thinking. This study created and validated the Six Corner Agility Test (SCAT) in response to the need for a reliable method to evaluate agility in young badminton players, ages 16 to 19. The SCAT is a new evaluation instrument that uses a combination of a NodeMCU ESP8266 WiFi circuit, sound speakers, LED lights, and infrared sensors to assess agility. These components are strategically placed at the front, rear, middle, and center portions of the badminton court to ensure a thorough evaluation of the player's agility. Using 5,000 samples, robust bootstrap methods were used to evaluate data from a sample of 464 people (260 men and 202 women) using IBM SPSS version 23 software. The test was observed through a real-time web application for each player and after the completion of the test, the time spent to finish the test was recorded. The latter time was the final result which depicted the agility level of the player. The male participants' performance was categorized using a reference norms table mentioning: "Excellent" (less than 10.73 seconds), "Good" (11.27 to 11.83 seconds), "Average" (12.40 to 12.93 seconds), "Fair" (13.50 to 14.23 seconds), and "Poor" (14.79 seconds or more). The female participants' performance was categorized using a reference norms table mentioning: "Excellent" (less than 11.97 seconds), "Good" (12.54 to 13.10 seconds), "Average" (13.70 to 14.21 seconds), "Fair" (14.96 to 15.44 seconds), and "Poor" (15.89 seconds +). The findings demonstrate that the SCAT supported by its norms table is an effective and reliable tool for assessing agility in young badminton players providing valuable insights for coaches and athletes in their training and performance evaluation

Keywords: *agility device, badminton players, norms table, six corner agility test*

ID 77

Comparison of Physical Activity Level and Health Related Physical Fitness among Type 2 Diabetes Mellitus Patients in General Sir John Kotelawala Defence University Hospital: A Case Control Study

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This study compares health-related physical fitness (HRPF) and physical activity level (PAL) in adults with Type 2 Diabetes Mellitus (T2DM) and age-gender matched non-T2DM controls to understand their overall health status. A case-control study included 202 participants, with 101 T2DM patients and 101 controls. PAL was assessed using the international physical activity questionnaire. Under HRPF components, cardiorespiratory endurance (CRE) was measured using the six-minute-walk-test, flexibility by the sit-and-reach test, muscle strength/endurance via the 30-second-sit-to-stand test, and body composition through the body mass index (BMI). The statistical package for the social sciences version 25.0 was used for the data analysis. The mean age of the sample was 48.3±7.7 years.Cases and controls consisted of 54.5% and 60.4% females respectively. PAL is significantly lower among the T2DM patients compared to the healthy controls. (615.4 ± 523.3 vs 432.8 ± 373.8 Metabolic Equivalent - minutes, $p < 0.05$). CRE (386.8 ± 64.7m vs 445.2 ± 63.0m, $p<0.05$), flexibility (14.2 ± 2.81cm vs 14.9 ± 2.3cm, $p<0.05$), muscle strength and endurance (11.1 ± 2.5 reps/30s vs 13.0 ± 1.4 reps/30s, $p<0.05$) were significantly lower among the T2DM patients compared to the controls. BMI was not significantly different in T2DM group compared to the controls (24.4 ± 2.9 kg/m^2 vs. 23.7 ± 2.2 kg/m^2, $p > 0.05$) T2DM patients demonstrated lower HRPF and PAL compared to age and gender -matched controls highlighting the importance of promoting HRPF and PA among T2DM patients.

Keywords: *type 2 diabetes mellitus, case control study, physical activity level, health related physical fitness*

ID 103

Comparison of Health Related and Sport Related Characteristics of High-level and Low-level Under-14 Tour Ranked Tennis Players in Sri Lanka

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Tennis demands physical prowess and skill mastery where players' physical attributes play a crucial role in performance and injury prevention. A study conducted at the Sri Lanka Tennis Association examined 40 players (20 males, 20 females) using stratified random sampling, categorized by high and low groups. This study encompassed physical measurements and fitness tests including handgrip dynamometry, beep tests, sit and reach tests, hexagon tests, Y-balance tests, and medicine ball throws to compare the physiological characteristics of under-14 tour ranked tennis players in Sri Lanka. Results highlighted significant differences in health-related physical fitness among male players. High-level males exhibited superior endurance (mean 7.05 vs. 6.16), flexibility (mean 1.65 vs. 0.45), and strength (PHS=26.80 vs. 22.40, BHS=25.70 vs. 20.90, LHS=24.60 vs. 19.40). Statistically significant variations were observed in PHS ($p=0.040$), average strength ($p=0.031$), and endurance ($p=0.017$). Conversely, no significant differences were found among female players in these aspects. Sport-related physical fitness comparisons revealed significant disparities among males in balance components: BRA ($p=0.013$), BLA ($p=0.002$), and BLPL ($p=0.199$). Among females, significant differences were noted in balance components like BRA ($p=0.034$), BRPL ($p=0.004$), BRPM ($p<0.001$), BLPL ($p<0.001$), and BLPM ($p=0.002$). In summary, high-level male players demonstrated superior strength and endurance compared to lower-ranked peers, while female players exhibited pronounced differences in balance components. These findings underscore the importance of targeted training to enhance specific physical attributes crucial for competitive tennis success. Future research with larger samples and longitudinal designs will be essential to validate and refine training programs.

Keywords: *health related fitness components, sport related fitness components, junior ranked tennis players*

ID 281

The Association between Physical Characteristics and Risk of Ankle Injury Occurrence among Professional Handball Players in the Sri Lankan Air Force

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Handball, known for its high injury rates among Olympic sports was the focus of a study investigating the link between physical characteristics and ankle injury risk in professional handball players of the Sri Lankan Air Force (SLAF). The study aimed to assess key physical attributes—balance, anaerobic power, agility, lower limb muscle strength, and endurance—and their association with ankle injuries. Conducted as a descriptive cross-sectional study, it involved 25 players (14 males, 11 females) with measurements taken using the Y balance test, vertical jump test, agility T-test, hand-held dynamometer, leg press test, and Star Excursion Balance Test (SEBT). Ankle injury risk was indicated by a 4 cm or greater difference in anterior reach distance on the SEBT. The average age, weight, and height for males were 30.4±4.9 years, 69.4±9.8 kg, and 174.2±9.1 cm, and for females were 28.7±4.9 years, 60.8±9.7 kg, and 165±6.3 cm, respectively. Significant differences were found in agility T-test and left evertor muscle strength between players with and without ankle injury risk. While agility T-test showed an insignificant positive correlation with injury risk, vertical jump, Y balance tests, and various muscle strength tests had insignificant negative correlations. Notably, left evertor muscle strength showed a significant negative correlation with injury risk indicating that stronger left evertors are associated with a lower risk of ankle injuries. Overall, 76% of players were at risk of ankle injury, with 90.9% of those being female.

Keywords: *handball, star excursion balance test, ankle injury occurrence*

ID 351

The Effects of Physiotherapy Management on the Quality of Life Post-Stroke Ambulatory Hemiparetic Patients in the Neurology Unit at the National Hospital of Sri Lanka (NHSL): A Longitudinal Study

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Physiotherapy plays a crucial role in post-stroke rehabilitation, addressing motor deficits and improving quality of life (QOL) through interventions like lower limb strengthening and gait training. The objectives of this research were to determine the effect of physiotherapy management on the quality of life, and to evaluate the differences in QOL based on gender and education level categories. The study was conducted longitudinally with hemiparetic post-stroke patients in the ambulatory phase, rated 1-3 on the modified Rankin scale. A sample size of 15 was calculated based on the prevalence of hemiparetic stroke patients in Sri Lanka. Data collection involved interviewer-administered post-stroke quality of life questionnaires, conducted at three assessment points over four months. Appropriate tests on the SPSS 25 package were used for statistical analysis. Initially, the age distribution ranged from 41 to 77 years, with a mean age of 58.6 years (n=15). Education levels varied, with 75% completing middle school education. Significant changes in QOL scores were found after one month and three months from the discharge ($p<0.005$). Notable disparities in QOL scores were observed between genders at Discharge (Males; n=10, Females; n=5, p=0.027). Positive correlations were found between quality of life scores and gender ($r = .475$, $p = .037$). This study concludes that physiotherapy management has contributed to the significant enhancement of post-stroke quality of life and further studies can be conducted with a larger population for a longer time period to identify the long-term effects of physiotherapy on QOL.

Keywords: *physiotherapy, post-stroke, quality of life*

ID 537

Scapula Dyskinesis in Patients with Chronic Neck Pain in Selected Hospitals in Colombo District, Sri Lanka

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Neck pain is a prevalent musculoskeletal condition affecting a significant portion of the population. This results in impaired functionality of associated anatomical structures such as shoulder joint and scapulothoracic joint, relative to individuals without neck pain. While much attention has been given to the relationship between chronic neck pain (CNP) and general musculoskeletal dysfunction, the specific impact of CNP on scapula dyskinesis (SD) remains underexplored. This study aims to compare SD between CNP patients and individuals without neck pain. A cross-sectional study was conducted among 55 participants aged 18-65 years diagnosed with CNP (NP group), attending the Department of Physical Medicine at University Hospital Kotelawala Defense University (UHKDU) and Colombo South Teaching Hospital (CSTH). Age, gender and BMI matched 55 participants without CNP (Healthy group) were recruited from the eye-clinic UHKDU. Socio-demographics data were collected through a questionnaire and SD was assessed with the Lateral Scapular Slide test (LSST). The mean age of the population was 48.6 ±12.6 years, and the mean BMI was 26.6±4.3kg/m2. 76.4% of the population were females. 56.4% of NP group reported positive for LSST and, 12.7% of the healthy group reported positive for LSST. LSST results showed significantly greater distance ($P<0.01$) in between the inferior border of the scapula in NP group compared to healthy group. Scapular dyskinesis in the NP group is five times reduced compared to the healthy group. Neck pain can result in scapula dyskinesis.

Keywords: *chronic neck pain, lateral scapular slide test, scapula dyskinesis*

ID 715

Knowledge and Practice of Ergonomics and Their Associations with Work-related Musculoskeletal Disorders among the Health-supportive Staff of the National Hospital Kandy, Sri Lanka

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Health-supportive workers (HSWs) in healthcare facilities have a greater risk of work-related musculoskeletal disorders (WRMSDs) due to manual handling of patients and equipment. However, practicing ergonomics can prevent WRMSDs effectively. This study aimed to assess the levels of knowledge and practices of ergonomics and their relationship with WRMSDs among HSWs at National Hospital Kandy (NHK). A descriptive cross-sectional study was conducted from November to December 2023 at NHK with a sample of 403 health care assistants and health attendants who were randomly selected. HSWs who were pregnant, or on leave due to any reason were excluded. Knowledge and practice were assessed using an interviewer-administered questionnaire while the Nordic Musculoskeletal Questionnaire was used to identify WRMSDs. Knowledge levels of ergonomics were categorized as poor (0–10), fair (11–20), good (21–30), and very good (31–40), while practice levels of ergonomics were categorized as poor (5–9), moderate (10–14), and good (15–20). The chi-square test was used to describe the associations between variables. Among participants, 250 (62%) were female and 153 (38%) were male. Most participants (n=151, 37.5%) were aged 31–40 years, and the majority (n=189, 46.9%) had 0–10 years of experience as a HSW. The prevalence of WRMSDs among HSWs was reported as 88% (n=357). Knowledge levels showed that 62% (n=250) had “good” knowledge, and 31.8% (n=128) had “very good” knowledge of ergonomics. In practice of ergonomics, 60.8% (n=245) were at a “moderate” level, and 30.5% (n=123) were at a “poor” level. There was a statistically significant association between knowledge and WRMSDs ($p=0.01$), as well as between practice and WRMSDs ($p<0.001$). Despite a good level of knowledge about ergonomics, a high prevalence of WRMSDs was noted due to inadequate ergonomic practices. Therefore, authorities should implement ergonomics training programs, self-evaluation checklists, and ergonomic-friendly instruments to prevent WRMSDs.

Keywords: *ergonomics, knowledge, practice, work-related musculoskeletal disorders, health-supportive staff*

ID 335

Spiritual Care Competency and Barriers to Spiritual Caregiving among Student Nurses at Colleges of Nursing in the Western Province of Sri Lanka

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Student nurses engaged in clinical practice should be able to provide spiritual care for patients and enhance holistic health. The objective of the study was to determine the level of competency in providing spiritual care and barriers among student nurses for providing spiritual care at colleges of nursing in the Western Province, Sri Lanka. A descriptive cross-sectional study was conducted by recruiting a systematic random sample of 333 second-year student nurses from Colombo, Kandana, and Kalutara Colleges of Nursing. A pre-tested (n=80) and self-administered, 27-item spiritual care competency scale was used to measure the competency in spiritual care, and a 09-item barrier identifying tool was used to identify the barriers encountered by student nurses, utilized after confirming reliability and content validity. The study was registered under Ethics Review Committee of the Open University of Sri Lanka (ERC/2023/23). Descriptive and inferential statistics were used for analysis using SPSS version 21. The majority of the sample comprised female students (n=302, 90.7%), with a mean age of 25.02 ± 1.06 years The overall spiritual care competency score (SCCS) was 3.795 (moderate level) where males reported lower competency (3.743) than females (3.798). Highest competencies were reported for Sub-domains; “communication” (4.09) and “attitudes towards patient spirituality” (4.14). The lowest competencies reported were “referrals” (3.57). Significant associations were noted with religion and SCCS (p=0.002). The most reported barrier for student nurses was, “Lack of time, 65.2%” and the least reported was, “do not consider spiritual care necessary, 31.5%”. The study results showed that the student spiritual care competency was at moderate levels. Several clinical settings-related barriers and self-perceived barriers were highlighted in the study.

Keywords: *spiritual care competency, student nurses, barriers, spiritual caregiving*

ID 429

Knowledge, Practices, and Factors Associated with Complementary Feeding among the Mothers of Children Aged 6-24 Months Attending the Child Welfare Clinic at Piliyandala Medical Officer of Health Area

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Complementary feeding refers to introducing safe and nutritious foods alongside breast milk at six months of age, as breast milk alone may not be sufficient for the infant. However, most community based studies currently focus on breast feeding practices, neglecting infant and child feeding practices. Inadequate knowledge about complementary foods and poor feeding practices are more likely to cause malnutrition, stunting, delayed development, and increased susceptibility to diseases. Therefore, this study was conducted to determine knowledge, practices and the factors associated with complementary feeding among mothers of children aged 6-24 months attending the Child Welfare Clinic at Piliyandala Medical Officer of Health (MOH) area. A descriptive cross-sectional study was conducted among 300 mothers who were recruited using the non-probability convenient sampling method at six Child Welfare Clinics, using a pretested self-administered questionnaire. Ethical approval was obtained prior to data collection (RP/S/2023/54). Data were analyzed using SPSS version 23. The majority of the respondents (98%) portrayed a good level of knowledge (Mean score-19.17 ± 1.72) and a good level (98%) of practice (Mean score 19.54 ± 1.63) regarding complementary feeding. A statistically significant association was observed between the mother's age and the level of knowledge ($p = 0.001$), the level of practice ($p= 0.001$), and level of education ($p=0.033$). Moreover, a weakly positive correlation was observed between knowledge and practice ($r = 0.231$, $p= 0.001$). Thus, these results indicate that mothers with good knowledge showed better practices regarding complementary feeding. Further, it is suggested to strengthen the existing practices among mothers and replicate similar studies for broader insights.

Keywords: *mothers' knowledge, practices, complementary feeding*

ID 522

Enhancing Patient Safety: Medication Administration Related Knowledge, Practices and Associated Factors among Nurses at Colombo South Teaching Hospital, Sri Lanka

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Ensuring patient safety is paramount in healthcare settings, where nurses' expertise and precision in medication administration play critical roles. This study delved into the knowledge, practices, and associated factors related to medication administration at Colombo South Teaching Hospital (CSTH). A descriptive cross-sectional study was conducted among 100 randomly selected nurses working in the medical and surgical wards at CSTH after obtaining ethical approval from the Ethics Review Committee, KAATSU International University, Sri Lanka. Data were collected using an interviewer-administered questionnaire and analyzed using SPSS version 25. The mean age was 31.51 ± 6.014 years. The majority were female (n = 84, 84%), Sinhalese (n = 97, 97%), and married (n = 61, 61%). There were significant deficiencies in nurses' knowledge despite consistent adherence to essential practices such as reading the BHT/medication administration record (n = 100, 100%) and routinely checking medication expiration dates (n = 87, 87%). Notably, 60% (n = 60) of nurses exhibited inadequate knowledge of pharmacology, while an alarming 92% (n = 92) lacked proficiency in medication dilution, storage, management, and drug dose calculations. These shortcomings were reflected in the mean knowledge scores: 51.41 ± 19.63 for pharmacology, 43.02 ± 10.72 for drug management, and 56.02 ± 19.26 for dose calculations. Pharmacological knowledge was significantly associated with participation in recent drug management courses ($p = 0.000$), while no significant correlations were observed with gender ($p = 0.824$), education level ($p = 0.669$), religion ($p = 0.581$), or race ($p = 0.338$) at a 95% confidence interval. Although nurses adhered to medication administration protocols, critical knowledge gaps in pharmacology underscore the necessity for targeted educational interventions to enhance patient safety.

Keywords: *knowledge, practice, medication administration, nurses, CSTH*

ID 639

Personal Factors Affecting Completion of Health Statistics Course among Undergraduates Nurses: A Cross-sectional Study in a State University of Sri Lanka

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Health statistics is considered a hard course in the undergraduate curriculum. Though many factors have been identified in the global context on the success of students in statistics education, underlying factors affecting the successful completion of this course among undergraduate nursing students in the local context have scarcely been investigated. Thus, this study aimed to determine personal factors influencing completing the Health Statistics course. This descriptive cross-sectional study was conducted in 2019 and included diploma-qualified nurses (n=96) who enrolled to pursue a nursing degree at a state university in Sri Lanka. A pre-tested, self-administered online questionnaire was administered. It contained 33 questions assessing factors divided into three domains; student-related (12 questions), home related (9 questions), and occupational-related (11 questions). Responses were rated on a 5 point Likert scale and mostly influential denoted by high mean scores and vice versa. Data was analysed using SPSS 21. Descriptive statistics was used. Ethical clearance was obtained. Most nurses were females (88.7%) and married (78.4%). The overall scores of perceived student-related factors, home-related factors, and occupational-related factors were 39.71 (range 12 - 60), 28.31 (range 9 – 45), and 30.37 (11 -55) respectively. This denotes that student-related and occupational-related factors mostly influence students more than home-related factors in the completion of the course. The most influential personal factors for successful completion of the course were completion of assignments on time (mean 4.13), adequate self-preparation for continuous assessments and final examinations (mean 3.97), active listening to the teacher during the lecture (mean 3.96), financial support (mean 3.94), family support (mean 3.93) and determination of showing good performance in the course (mean 3.92). In conclusion, successful completion of the Health Statistics course is mostly based on the students' learning engagement and the support of their families. Further studies are warranted in a larger sample.

Keywords: *personal factors, health statistics course, undergraduate nurses, state university, Sri Lanka*

ID 651

Knowledge, Attitudes, and Awareness of Cannabis Use among Final Year Nursing Undergraduates in Sri Lanka

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Cannabis usage has garnered significant attention due to its increasing usage and potential health impacts. As future healthcare professionals, nursing students play a vital role in educating and caring for individuals affected by cannabis. This study aimed to fill the existing research gap by assessing the knowledge, attitudes, and awareness of cannabis use among all final year nursing undergraduates in Sri Lanka, a topic not previously explored in this population. A descriptive cross-sectional study was conducted using a self-administered questionnaire among 312 final year nursing undergraduates representing all nursing faculties in state universities in Sri Lanka. The questionnaire was validated after two rounds of revisions suggested by five experts in the validation committee. Ethical approval was obtained from ERC at KDU, and the necessary administrative permissions were obtained from state universities. The sample comprised 64.4% females and 35.6% males, with a mean age of 25.28 years. Most were Sinhala (79.8%) and Buddhist (67.9%). Cannabis use was reported by 19.6% of participants, with 72.1% of them continuing usage. The median scores for Knowledge, Attitude, and Awareness were 74.0, 77.0, and 47.50, respectively. Significant positive correlations were observed between knowledge and attitude ($r=0.433$, $p<.001$), knowledge and awareness ($r=0.286$, $p<.001$), and awareness and attitude ($r=0.189$, $p<0.001$). These results indicate a considerable knowledge gap and varying attitudes towards cannabis use, suggesting the need for targeted educational interventions. Enhancing knowledge and fostering positive attitudes can improve awareness and patient care, underscoring the critical role of nursing students in managing cannabis use. High knowledge but low awareness levels may result from limited practical exposure, and curriculum focused more on theory than real world aspects of cannabis use.

Keywords: *cannabis, knowledge, attitudes, awareness, nursing undergraduates*

ID 707

Assessment of the Awareness and Risk of Pre-diabetes among a Group of Garment Factory Workers in Boralesgamuwa Medical Officer of Health (MOH) Area

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Pre-diabetes is a precursor before the diagnosis of type 2 diabetes mellitus, impacting individuals' health. Certain occupations may increase the risk of pre-diabetes, such as those involved in shift work, prolonged sitting times, or psychological distress. Thus, this study aimed to assess the risk of pre-diabetes among a selected group of garment factory workers in the Boralesgamuwa MOH area, focusing on their awareness of pre-diabetes and associated risk factors. A descriptive cross-sectional study was conducted with 320 participants recruited by convenient sampling method, from 04 garment factories in the Boralesgamuwa MOH area. A pre-tested interviewer-administered questionnaire and the American Diabetes Association (ADA) pre-diabetes risk assessment tool (cross-culturally adapted) were used to obtain data after the ethical approval (RP/S/2023/50) had been obtained. Data were analyzed using SPSS 25.0 (descriptive stat and chi-square). Results indicated predominantly female (67.5%) participants with a mean age of 39±12 years and a BMI of 23.57±3.84 kgm2 in the sample. Only 4.10% were aware of the fasting blood glucose range defining pre-diabetes. According to the ADA tool, 26.9% were at risk of pre-diabetes, yet diet control was practiced only by 10.9% and only 10% engaged in regular physical exercise. Statistical analysis with chi-square test revealed significant associations between pre-diabetes risk and factors such as age (p=0.001), weight (p=0.001), education level (p=0.006), occupation (p=0.011), family history of type 2 diabetes (p=0.001), history of hypertension (p=0.001), and diet control (p=0.01). In conclusion, a critical lack of awareness regarding pre-diabetes among this group was observed. Addressing the knowledge gap through educational programs is crucial while promoting lifestyle modifications including regular physical exercise and weight management to mitigate the risk of pre-diabetes in this vulnerable group.

Keywords: *pre-diabetes, awareness, risk factors*

ID 720

Digital Sustainability Awareness and Practices among Nursing Students in Gampaha District

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The healthcare practices should be transformed to a technological revamp, in order to contribute to efficient patient-care goals. Current study aimed to understand the awareness and practices of digital sustainably among nursing students in the Gampaha district. In this cross-sectional descriptive study, the data were collected from 357 nursing students studying in the nursing schools of Gampaha district through a structured, online, self-administered questionnaire. The Cronbach's alpha for every variable used in this study was higher than 0.7. The response rates below 50% were interpreted as low, as they indicated less engagement. The participants were selected via simple random sampling method, and they aged from 18 to 25 years old (79.8%, n=285), with a female majority (89.4%, n=319) and single (96.6%, n=345). Most respondents were diploma students (54.9%, n=196) at either government (54.3%, n=194) or private institutions (45.7%, n=163), revealing that 70.3% (n=251) had prior knowledge of digital sustainability. Despite this, detailed understanding was limited, with only 0.6% (n=2) extremely aware and 47.3% (n=169) moderately aware. Sustainable practices engagement varies: 26.9% (n=96) ranging from digital document sharing to e-waste recycling and it was notably low 2.8% (n=10). More than half of the students (57.4%, n=205), rated that they have a 'good' understanding of the environmental impact of digital technologies. However, a small fraction informed about institutional sustainability initiatives (4.5%, n=16). Out of the participants, 84.3% (n=301) found digital tool usage, as clear and logical, and 61.1% (n=218) use them independently. Daily digital device usage was most common, with 50.4% (n=180) of participants using devices for 3-4 hours. The main obstacles to adopting sustainable practices were a lack of motivation (19.3%, n=69) and financial limitations (19.0%, n=68). Implementing sustainable digital practices impacted student engagement, with 44.5% (n=159) reporting a decline in these practices. This study highlights the presence of a profound basic awareness on digital sustainability among the participants, with a moderate level of its practice in day today life.

Keywords: *sustainability, nursing education, tech in healthcare, environmental impact, educational reform*

ID 726

A Study on Ventilator-associated Pneumonia among Critically Ill Adult Patients Admitted to Intensive Care Units of Tertiary Care Hospitals in the Kandy District, Sri Lanka

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Critically ill patients on mechanical ventilation are at the potential risk of Ventilator-Associated Pneumonia (VAP). However, there is limited evidence and standard protocol in the Sri Lankan context. A descriptive cross-sectional study was conducted among 133 adult intubated patients who were admitted to the Intensive Care Units (ICU) of the Teaching Hospital Peradeniya, the Dental Hospital Peradeniya, and the National Hospital Kandy during October and November, 2023. The objectives were to assess the incidence of VAP and associated factors for VAP. Sample size was calculated using Yamane's formula and selected using stratified sampling and simple random sampling methods. Data was collected using a pre-tested structured data collection sheet and online questionnaire for nurses, and analyzed using SPSS version 26. The incidence of VAP was approximately 8 cases per 100 intubated patients in selected three tertiary care level hospitals for a one-month period. Among VAP cases, 72.73% (n= 8) exhibited Gram-negative bacteria, 18.18% (n= 2) Gram-positive, and 9.09% (n =1) mixed presence of both types. The most prevalent microorganism was *Acinetobacter* 36.36% (n =4), followed by *Pseudomonas* 27.27% (n =3), Gram-positive *Cocci* 18.18% (n =2), *Coliform* 9.09% (n =1), and a combination of *Pseudomonas* and *Bacilli* 9.09% (n =1). There was a significant association between the VAP and number of endotracheal tube suction passes ($p = 0.006$), length of ICU stays ($p < 0.001$), length of endotracheal intubation ($p < 0.001$), and duration of mechanical ventilation ($p < 0.001$). Promoting awareness of preventing VAP and the use of proper techniques for endotracheal tube care among nursing staff is recommended to reduce the incidence of VAP, thus reducing the length of the ICU stay and healthcare costs.

Keywords: *ventilator-associated pneumonia , intensive care unit , critically ill patients*

ID 741

Nursing Students' Perception of Artificial Intelligence: An Online Mobile Survey

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The emergence of Artificial Intelligence (AI) in the Sri Lankan health sector is still in its early stages. It requires substantial improvements to enhance healthcare efficiency and accuracy, ensuring better patient care management. This descriptive cross-sectional study examined the confidence and perceptions of 277 nursing students in Sri Lanka regarding the utilization of AI within healthcare settings. The primary aim was to evaluate currently enrolled nursing students' familiarity with AI, their perceptions of its utility, their concerns about potential job displacement, and their inclination towards adopting AI in clinical practice. The study employed a validated self-administered online survey adapted, and distributed among students enrolled in diploma through postgraduate programs across both private and government universities selected through a stratified random sampling method. They were randomly selected based on the program type. The participants selected had access to mobile devices and the rest were excluded from the study. Ethical approval for the study was obtained from the ERC committee of IIHS. The results were analyzed using SPSS version 26 software. Findings reveal that a substantial majority of students are acquainted with AI (79.7%, n=221) and acknowledge its beneficial applications in medical contexts (81.9%, n=227). However, opinions are divided regarding AI's superiority in diagnostic capabilities, with nearly half of the respondents (49.8%, n=138) in agreement. Concerns regarding job displacement are notable among respondents (48.8%, n=135), yet a significant proportion (59.2%, n=164) express a willingness to consistently employ AI in future medical decision-making. Students identified various advantages of AI, such as expediting processes (51.3%, n=142) and minimizing errors (17.3%, n=48), while also expressing reservations about its limitations in unforeseen scenarios (54.9%, n=152) and its inability to convey emotional understanding. The study concluded that, although nursing students generally exhibited a positive perspective toward AI, it is essential to explore the benefits of AI as a 'supportive tool' in healthcare settings.

Keywords: *artificial intelligence, nursing education, nursing students, AI in healthcare*

ID 744

Knowledge, Attitudes and Practices towards Carcinogenic Foods Consumption and Cancer Prevention among Undergraduate Students of Faculty of Allied Health Sciences, General Sir John Kotelawala Defence University

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Carcinogenic foods pose a considerable risk in cancer prevalence when consumed regularly. Undergraduate students represent a critical group undergoing a significant lifestyle transition, including eating habits and behaviors, making it an opportune time to investigate the nature of carcinogenic food consumption among them. This study aimed to assess the knowledge, attitudes, and practices regarding carcinogenic food consumption among undergraduate students at the Faculty of Allied Health Sciences, General Sir John Kotelawala Defense University, Sri Lanka. A descriptive cross-sectional survey was conducted with 422 students from various disciplines, selected through stratified random sampling and utilizing a pre-tested self-administered questionnaire. Descriptive statistics and Chi-square tests were employed, considering <0.05 as significant. Results indicated that the majority were aged 23 years (29.4%; n=124), single, Buddhist female in their second academic year residing in boarding facilities and preparing their own meals. Findings revealed that only 36%(n=152) of students had a good understanding of carcinogenic foods, 55.7%(n=235) had poor attitudes towards these foods, and 50.7%(n=214) practiced good habits related to food consumption and cancer prevention. Significant associations were observed between students' religious affiliation and their knowledge (p=0.03), attitudes (p=0.001), and practices (p=0.002) about carcinogenic foods consumption, while practice was significantly associated with the students' accommodation type (p= 0.02), food consumption type (p=0.002) and their attitudes (p= 0.001). The study underscores a concerning lack of awareness and suboptimal attitudes towards carcinogenic foods, suggesting the need for targeted interventions to enhance knowledge and foster healthier attitudes to mitigate long-term health risks.

Keywords: *carcinogenic foods, knowledge, attitude, practices*

ID 794

Knowledge, Practices and Factors Associated with Physical Activities during Pregnancy amongst Primi Mothers Attending Antenatal Clinics in the German-Sri Lanka Friendship Hospital for Women, Galle

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Engaging in physical activities (PAs) during pregnancy leads to health benefits by reducing the risk of pregnancy complications. Identifying primi mothers' knowledge and practices on PAs facilitates a better pathway to improving their health and social status. This study aimed to assess the knowledge and practices of PAs during pregnancy and the factors associated with them among primi mothers. A cross-sectional study was conducted among 271 primi mothers. A modified, pre-tested interviewer-administered questionnaire was used. A chi-square test was performed using SPSS version 26.0 to assess the association of knowledge and practices with demographic characteristics. The mean age (SD) was 25 (±4.8) years. Knowledge regarding PAs was the following; 41% had 'good knowledge', 49.8% had 'average knowledge' and 9.2% had 'poor knowledge'. Knowing the importance of PAs during pregnancy was 100%. Around 92% were not involved in prenatal exercises. Around 74% had engaged in normal household activities. The commonest information source for involving PA during pregnancy was family and friends (94.5%). There was a significant association between levels of knowledge and, pregnancy status, age, level of education, and monthly income (All p= 0.001). 4.8% had 'good practice' while 95.2% reported 'poor practice' of PAs. A majority had good or average knowledge of PAs during pregnancy. Even though the primi mothers had a good level of knowledge, they reported poor practices of PAs during pregnancy. The importance of PA-related awareness programs to enhance the understanding of the health benefits of PAs during pregnancy needs to be emphasized.

Keywords: *knowledge, physical activities, practices, primi mothers*

ID 827

Improving Quality of Life of Older Adults through a Health Promotion Intervention in a Rural Village in Puttalam District

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Positive ageing optimizes health, participation, and security to enhance Quality of Life (QOL) as people age. This allows older adults to engage in society according to their capacities with appropriate support. This study aimed to assess the QOL before and after a health promotion intervention to improve positive ageing among older adults in Galmuruwa, a rural village in Puttalam District. The study was in two phases. A survey of 100 older adults conducted using the WHO QOL Assessment (WHOQOL-BREF) questionnaire, administered before and after a four-month health promotion intervention. The community-based health promotion intervention was conducted during the second phase with a purposively selected group of older adults, along with their family members, including adolescents and caregivers. Determinants of positive ageing were identified, activities to promote positive ageing and QoL were designed and implemented over four months, progress was monitored and evaluated daily, and actions were modified based on the observations. Data collection methods included checklists, group discussions, researchers' observations, reflective journals, and monitoring tools like calendars and charts. Data analysis utilized simple descriptive statistics and qualitative thematic analysis. Among 100 participants, 69 were female and 31 were male, with 61 aged 60-69, 30 aged 70-79, and 9 aged 80 and above. Ninety-one percent had one or more non-communicable diseases but demonstrated a low level of awareness regarding the management of such conditions. Four themes emerged in line with the health promotion process and outcomes of the intervention; 1-Overcoming doubt, raising awareness, and igniting enthusiasm, 2-Initiating the actions, 3-Follow up, sustaining and channelling towards optimal effectiveness and 4-Dreams come true upon awakening. Findings imply that the intervention significantly improved QoL of older adults across physical, psychological, spiritual, and environmental health domains. Before the intervention, only 17% rated good QoL, 60% reported moderate to severe pain. Post intervention 54% rated good QoL and pain levels reduced to 29%. Initial findings indicated a sedentary lifestyle, unhappiness, loneliness, less interpersonal interactions and hopelessness, all of which improved following the intervention. A significant improvement noted in awareness in management of non-communicable disease management and prevention, physical activity levels, community interactions

and perceived happiness. The health promotion initiative yielded significant positive outcomes in improving QoL of older adults and their families. Utilizing participatory approaches in conjunction with health promotion strategies effectively fosters healthy lifestyle practices among lay communities.

Keywords: *older adults, positive ageing, health promotion intervention, quality of life*

ID 828

Uptake of Human Papilloma Virus Vaccine and Factors Affecting the Uptake of Human Papilloma Virus Vaccination among Adolescent School Age Children Attending Selected Government and Private Schools in Colombo District, Sri Lanka

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The Human Papilloma Virus (HPV) is a prevalent sexually transmitted infection worldwide. The current study aimed to assess the uptake and factors affecting the uptake of HPV vaccine among female school children aged 13-15 years in selected schools of Colombo district, Sri Lanka. A descriptive cross-sectional study was conducted, amongst female children (n=208) in selected government and private schools. Stratified random sampling method was used in the selection of the participants. The data was collected using a pretested self-administered questionnaire. Since the study included both pre and post COVID periods the effect of the pandemic on the vaccine uptake was assessed. The data analysis was done using SPSS version 25 software. The Chi squared test was used to test the associations between categorical variables. The HPV vaccination uptake was very good with the majority (96.2%, n=208) receiving at least 1 dose (HPV vaccine) and a considerable proportion (70.2%, n=208) receiving two doses. The majority (86.1%, n=208) received the vaccine from their schools. There was no significant influence on the uptake of HPV vaccine due to the COVID-19 pandemic. Although the most participants (71.2%, n=208) showed a good awareness and positive attitudes towards HPV vaccination, the level of knowledge was at a poor level (73.1%, n=208) regarding the HPV vaccine and the HPV vaccination programme. The participants' parents who had completed secondary education (Ordinary Level) had a significantly ($p<0.005$, 95% CI) higher awareness level. The study found that the HPV vaccine uptake amongst selected female children in the Colombo district is at a good level. It highlights the importance of strengthening educational efforts to increase awareness of HPV and its vaccination. By bridging the knowledge gap and capitalizing favourable attitudes amongst participants and their parents, it would be promising to boost vaccination rates and enhance protection against cervical cancers in future generations. Implementing comprehensive awareness programmes and distributing educational materials are the recommendations.

Keywords: *HPV vaccination rate, awareness, knowledge, attitudes*

ID 833

Knowledge, Attitudes and Practices on Hepatitis B Viral Infection among Nursing Undergraduates in General Sir John Kotelawala Defence University

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Nursing students who are often exposed to various body fluids are more prone to contract and transmit Hepatitis B infection. This study determined knowledge, attitude and practices on HBV among nursing undergraduates. A cross-sectional study was conducted among 267 nursing students at Kotelawala Defence University. A self-administered questionnaire composed of four sections including participants' sociodemographic, knowledge, attitudes, and practices about HBV was used for data collection. Data were collected from the entire population of nursing undergraduates at KDU, Sri Lanka. The data was collected using a pre-tested modified self-administered questionnaire. Data entry and analysis was by SPSS 26 software. Employing descriptive statistics to summarize data and as inferential statistics,independent sample t test, One-way ANOVA test, and Pearson's correlation coefficient test were used to explore relationships between variables. The study population consisted of 65.9% (143) females and 65.4% (142) were in the 21-23 age group. A total of students expressed moderate level of knowledge 57.6% (125), attitudes 59.0% (128) and practices 68.7% (149). There was a weakly positive correlation (r=0.033) and no statistically significant relationship (p=0.627) between knowledge and practice. This study found a significant association between nursing students' knowledge and their study year (p=0.022), attitudes and ethnicity (p=0.046), as well as practices and age (p=0.00), practices and age, also with study year (p=0.000). Considerable gaps in nursing students' theoretical grasp of Hepatitis B and their safety practices were identified, highlighting the need for educational programs, workshops, and practical training to improve empathy, attitudes, and real-world clinical skills.

Keywords: *Hepatitis B virus, knowledge, attitudes, practices*

ID 59

The Predictive Significance of Serum Creatinine in Management of Pregnancy Induced Hypertension: A Preliminary Study at the Teaching Hospital, Jaffna

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Pregnancy-induced hypertension (PIH) is a significant complication affecting maternal and foetal health. Identifying a reliable predictive marker for early prediction and diagnosis is crucial for effective management and prevention of adverse outcomes. This study was conducted to evaluate the effectiveness of serum creatinine as a predictive marker for hypertensive disorders in pregnant women. An analytical cross-sectional study was designed, and the population was categorized based on blood pressure readings, where 34 pregnant women with normal blood pressure (BP) and 34 pregnant women with PIH (140/90 mmHg on two or more occasion and without proteinuria). Serum creatinine levels were measured by Jaffe alkaline picric acid kinetic method. Receiver-operating characteristic curve analysis was employed to determine the diagnostic performance. The mean serum creatinine level was significantly ($p<0.001$) higher in pregnant women with PIH than in pregnant women with normal BP [0.76 (± 0.17) vs 0.53 (± 0.06) mg/dL respectively]. The area under curve (AUC) of serum creatinine was 0.950 (sensitivity: 91.2% and specificity: 85.3%) with the cut-off point of 0.585 mg/dL. The finding was evident that serum creatinine is a strong predictor for hypertensive disorders in pregnant women, with significantly higher levels in those with PIH. The study revealed the importance of monitoring serum creatinine levels in pregnant women with PIH for early identification of hypertensive disorders, supporting its use in clinical practice for risk stratification. Despite the significant findings, further research is warranted with more samples to determine the broader applicability of serum creatinine as a universal predictive marker across diverse populations.

Keywords: *predictive significance, serum creatinine, pregnancy induced hypertension*

ID 177

Cytokines and Lumbosacral Nerve Root Compression in Patients Undergoing Lumbar Microdiscectomy: A Cross-sectional Study

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Lumbar disc herniation (LDH) is intervertebral disc protrusion leading to spinal nerve compression causing pathological changes in lumbosacral nerves and initiating neural-immune cascades generating pain. The aim of the study was to investigate the association between selected cytokines and different levels of lumbosacral nerve root compression. A cross-sectional study was conducted in patients (n=33), diagnosed with LDH and undergoing microdiscectomy. Magnetic resonance imaging interpretations of the lumbar region were used to extract details regarding the involvement of selected lumbosacral nerve roots (L4, L5, S1 and cauda equina). Serum levels of tumor necrosis factor alpha (TNF-α), interleukin-6 (IL-6), and interleukin-8 (IL-8) were quantified using enzyme-linked immunosorbent assay. Cytokine levels were categorized as "very high" or "above upper limit of normal" based on the cutoff values indicated in the literature. Chi-square test was employed using Python 3.10 to investigate the association between cytokines and lumbosacral nerve root compression. Nerve root compression at L5 was predominant (57.6%) and low at L4 (18.2%). An equal number presented with had cauda equina and S1 nerve root compression (42.4%), and Chi square test results indicated a statistically non-significant association ($p>0.05$) between cytokines IL-6, IL-8, and TNF- and the specific nerve root compressions assessed (L4, L5, S1, and cauda equina). Though a statistically significant association with the subjected nerve root compression related to LDH was not observed, comprehensive studies with larger sample sizes and assessments of neurogenic factors are recommended.

Keywords: *lumbar disc herniation, IL-6, IL-8, TNF-α*

ID 543

Exploring the Potential of Antibacterial Activity of *Biophytum reinwardtii*: A Natural Ally against Antibiotic Resistance

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Biophytum reinwardtii (Gas nidikumba), a small herb that belongs to the family textitOxalidaceae, has been widely used in folklore medicine. The objective of this study was to investigate the antibacterial activity of *Biophytum reinwardtii*, whole plant against on organisms commonly isolated from diabetic chronic wounds. The plant extracts were obtained using Soxhlet extraction method using methanol and ethanol as the solvents. Disk and well diffusion assays were used to evaluate the antibacterial activity against *Staphylococcus aureus, Pseudomonas aeruginosa, Escherichia coli* and their respective ATCC strains. The minimum inhibitory concentration (MIC) was determined using the macro dilution technique and broth microdilution assay. The phytochemical constituents were assessed qualitatively. Both extracts showed antibacterial activity only against *Pseudomonas aeruginosa* (ATCC 27853) in well diffusion and disc diffusion methods with an unexpected nature of heteroresistance. The methanol extract showed an MIC value at 37.5 mg/ mL against *Pseudomonas aeruginosa* (ATCC 27853) using the broth microdilution assay. The Phytochemical analysis showed the presence of flavonoid (Lead acetate test), glycoside (Bontrager's test), phenols (FeCl3 test) and alkaloids (Wagner's test) which could be attributed to the antibacterial effect of the plant. The results of the study showed that *Biophytum reinwardtii* has the potential to act as an antibacterial agent against *Pseudomonas aeruginosa*, and it encourages further research on the plant.

Keywords: *Biophytum reinwardtii, antibacterial activity, heteroresistance*

ID 682

Colonization Rate, Associated Factors and ABST Pattern of MRSA in Pregnant Mothers Admitted for Delivery at a Selected Hospital in the Eastern Province, Sri Lanka

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Methicillin resistant *Staphylococcus aureus* (MRSA) infection can cause significant morbidity and mortality in neonates. This study aimed to determine the MRSA colonization in pregnant mothers, to identify associated factors, and to analyse their antibiotic sensitivity patterns (ABST). It was a descriptive cross-sectional study. A total of 235 pregnant mothers admitted for delivery at Teaching Hospital, Batticaloa in the Eastern province were enrolled. Nasal, rectal and vaginal swabs were collected from each mother from May to August 2023. Routine microbiological methods and disc-diffusion ABST testing were done to identify the *Staphylococcus aureus* and MRSA strains. Association between MRSA colonization and maternal factors were identified by Chi-square test, and Fisher's exact test was specifically used for cells with frequencies less than 5. Statistical significance was assessed at $p < 0.05$. From 235 pregnant mothers enrolled in this study, 36 (15.32%) were colonized with *Staphylococcus aureus*; 9 (3.83%) only in the nasal area, 24 (10.21%) only in the recto-vaginal region, and 3 (1.28%) at both sites. Thirty-three (14.04%) were colonized with MRSA, three participants at both sites. Therefore, the total number of MRSA strains was 36. Nasal and recto-vaginal site MRSA colonization rates were (12, 5.11%) and (24, 10.21%) respectively. The sensitivity of MRSA isolates was as follows: clindamycin (25, 69.44%), ciprofloxacin (32, 88.89%), co-trimoxazole (31, 86.11%), and tetracycline (34, 94.44%), and erythromycin (01, 2.78%). Significant association between overall MRSA colonization and anemia during pregnancy ($p = 0.032$) was observed. Overall, a 14.04% colonization rate with MRSA was found among pregnant women, indicating the need for further assessment of risk factors for colonization.

Keywords: *pregnant mothers, MRSA, colonization, risk factors, ABST*

ID 765

A Preliminary Study to Assess the Impact of Environmental Conditions on Microbiological Water Quality of Dug Wells in the Katuwawala Area, Colombo District, Sri Lanka

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Groundwater from shallow wells is a primary domestic water source in Sri Lanka and many other parts of the world. However, it is often left untreated, leading to significant vulnerabilities to pathogenic contamination due to environmental and geographical conditions exacerbated by population growth, urbanization, and industrialization. These factors render groundwater and surface water quality in both urban and rural environments susceptible to pollution from natural processes and human activities. Although groundwater is not typically nutrient-rich for microorganisms, it becomes polluted by environmental factors, resulting in nutrient levels that exceed permissible limits. This contamination can cause the spread of highly infectious diseases. This study was conducted in Katuwawala, Colombo District, Sri Lanka, to assess the microbial quality of well water in relation to environmental conditions. Nineteen well water samples from eight randomly selected locations were tested for *Escherichia coli (E. coli)* and coliforms using the Most Probable Number (MPN) method. The study revealed that only 25% of the sampled wells adhered to safety standards for human consumption. Conversely, 50% of the wells exhibited contamination levels exceeding permissible limits. The safety status of the remaining 25% of wells could not be accurately assessed due to prevailing uncertainties. This study indicates that microbial contamination of well water is heavily influenced by inadequate well construction, proximity to sewage pits, and poor geographical conditions, with unprotected wells showing the highest contamination levels. In contrast, wells that were properly constructed and maintained a sufficient distance from potential contamination sources exhibited better microbial water quality. To mitigate public health risks, it is crucial to inform residents, promote safety precautions, and encourage regular monitoring of well water quality.

Keywords: *microorganisms, E. coli, coliform, microbial contamination, safety standards*

ID 788

Synergistic Antimicrobial Activity of Marine Macro Algae *Sargassum crassifolium, Ulva fasciata, Dictyota spp.* and *Valoniopsis pachynema* against Multi-Drug-Resistant Bacteria

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The emergence of multi-drug-resistant (MDR) bacteria presents serious public health threats, underscoring the urgent need for novel antimicrobial agents. Due to the side effects of prolonged antibiotic use, marine algae rich in naturally occurring bioactive compounds, may have the potential for treatment displacing synthetic medicines. The present study aimed to determine the synergistic antimicrobial activity of selected four extracts (n=4) of algae plants *Sargassum Crassifolium, Ulva Fasciata, Dictyota spp.* and *Valoniopsis Pachynema* against six (n=6) clinical isolates, *Staphylococcus aureus, Enterobacter, Escherichia coli, Proteus, Klebsiella pneumonia*, and *Pseudomonas aeruginosa.* Four different crude seaweed extracts of each variant (Ethanol, Methanol, Chloroform, and Acetone) were isolated using both the Soxhlet and Shaking incubator. Upon the extraction of phytochemicals, crude extracts of each evaporated organic solvent were DMSO-diluted and subjected to antimicrobial susceptibility testing (AST) via well diffusion method. Inhibition zone diameter (mm) was measured following CLSI guidelines. The statistical analysis was obtained via SPSS V23.0. (95%, $P<0.05$) The crude extracts isolated from the Soxhlet extractor showed the highest sensitivity (std. 10.633, mean 67.33). Ethanol crude extractions of all four species showed weak to moderate activity (7-10mm). The synergism of ethanol and methanol extracts showed the highest sensitivity against all MDR bacterial strains (>15mm) while Chloroform in synergism with other solvents had low antibacterial activity (<7mm). *Staphylococcus aureus* revealed significant susceptibility ($p=0.02$) compared to other microorganisms, while *Klebsiella pneumonia* showed the significant highest resistance ($p=0.001$) to synergism of Ethanol and Methanol solvents. This highlights marine algae as potential sources for combating resistant bacteria.

Keywords: *marine macro-algae, multi-drug resistant bacteria, synergistic antimicrobial activity*

ID 812

Microbial Composition and Antimicrobial Resistance Patterns in Beach Sand and Sea Water across Three Selected Beaches in the Colombo District, Sri Lanka

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Numerous microorganisms, including potential pathogens, have been identified through marine water quality assessments by coastal management authorities globally. Sri Lanka, notably, faces substantial marine pollution issues, thus the present study was conducted to examine the microbial composition of both seawater and beach sand in three selected popular beaches in Colombo District, Sri Lanka. Seawater samples (n= 30) and sand samples (n= 30) were collected from three different locations. Samples were cultured in Potato Dextrose and Nutrient Agar media and isolations were identified via conventional standard biochemical key. Antibiotic susceptibility patterns were evaluated using antimicrobial susceptibility testing (ABST) and inhibition zone diameters (mm) were measured in accordance with CLSI guidelines. Analysis was obtained via SPSS V25 (95%, P = 0.05). Five pathogenic microorganisms namely *Pseudomonas spp., Bacillus spp., Staphylococcus spp., Enterococcus spp.* and *Acinetobacter spp.* were identified from both seawater and sand in all three locations. The analysis revealed significant difference ($p=0.03$) of diversity of microorganisms in each three locations. Microorganisms from Galle Face beach was uniformly resistant to Ampicillin and Amoxicillin (100%) and 41.7% were sensitive to Gentamicin, with *Pseudomonas spp., Bacillus spp.*, and *Staphylococcus spp.* All isolations of Mount Lavinia were sensitive to Cephalexin and Augmentin while Ciprofloxacin had 11.8% resistance in *Enterococcus* and *Staphylococcus* along Vancomycin showed 94.1% resistance. Wellawatte beach isolations were sensitive for Augmentin (100%) and all the microorganisms were resistant to Vancomycin while 33.3% were against Ciprofloxacin. Further compared to the Wellawatta beach isolations of Galle face beach shows the highest antibiotic resistance ($p<0.01$) in isolated microorganisms.

Keywords: *seawater quality, antibiotic sensitivity, resistance patterns*

ID 210

The Study of An Anti-Diabetic Activity Using *Syzygium Cumini, Costus Speciosus, and Melastoma malabathricum* Plant Extracts Compared to Standard Acarbose

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The purpose of this investigation was to develop a tablet formulation with antidiabetic properties using natural, polyherbal plant extracts, specifically *Syzygium cumini, Costus speciosus, and Melastoma malabathricum.* These plants were selected due to their antidiabetic potential for Diabetes Mellitus. Qualitative and quantitative analyses were performed to identify and characterize the chemical composition of these plant materials, focusing on their phenolic content, which is known for its antidiabetic potential. Phytochemical screening revealed the presence of key bioactive compounds, including flavonoids, tannins, phenols, etc. The phenolic composition, particularly the concentration of gallic acid, was determined using UV spectrophotometry. The *Syzygium cumini* was found to have the highest concentration of gallic acid at 19.28% in the dried concentrated extract, highlighting strong antidiabetic activity. The antidiabetic potential was further evaluated by testing their inhibitory effects on the α-amylase enzyme, which plays a critical role in carbohydrate metabolism. Inhibition of this enzyme can slow down carbohydrate digestion. The extracts were tested against this enzyme, and the IC_{50} values (the concentration required to inhibit 50% of the enzyme activity) were determined to assess their potency, calculated using dose-response curves, where different concentrations of the extracts were incubated with the enzymes. The amount of reducing sugars produced was measured. The *Syzygium cumini* exhibited the lowest IC_{50} value at 13.95 µg/mL, indicating strong inhibitory activity, while the reference drug, acarbose, had an IC_{50} value of 8.92 µg/mL. The plant extracts showed notable antidiabetic activity compared to acarbose. Thus, *Syzygium cumini, Costus speciosus*, and *Melastoma malabathricum* demonstrated 63.98%, 1.953%, and 25.60% equivalence inhibition activity, respectively, in comparison to acarbose (100%)

Keywords: *Syzygium cumini, Costus speciosus, Melastoma malabathricum, diabetes mellitus, anti-diabetic, α-amylase*

ID 305

Exploring Factors Influencing Medication Adherence among Hypertensive Patients in the Cardiology Clinic- University Hospital-KDU: A Qualitative Study

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Hypertension remains a significant global health concern requiring effective management strategies to mitigate associated risks. Continuous pharmacological therapy is essential for regulating blood pressure, with patient adherence to prescribed regimens being a critical factor for optimal outcomes. Although adherence to antihypertensive medications has been extensively studied, detailed investigations of patient behavior related to adherence are not prominent. This study aimed to examine the adherence behavior of patients within the Cardiology Clinic at University Hospital- KDU towards antihypertensive medications during self-administration. Qualitative data were collected through semi-structured interviews with 20 randomly selected participants. Data was collected until the data saturation point was achieved. Thematic analysis of verbatim transcripts identified three main themes influencing adherence: patient knowledge, counseling, and patient perception. Sub-themes under patient knowledge are knowledge of medication, knowledge of storage techniques, and brand preferences. Patient perception encompassed sub-themes such as side effects, satisfaction levels, financial status, and forgetfulness. Findings reveal that improved patient knowledge positively impacts medication adherence, with higher adherence observed among participants who are occupied or retired with higher education levels. Proper medication storage techniques were also associated with enhanced safety and effective use. The study underscores the multifaceted nature of medication adherence and highlights the need for tailored interventions focusing on education and counseling to optimize adherence and improve patient outcomes in cardiology settings.

Keywords: *hypertension, medication adherence, thematic analysis, patient perception, counseling, medication knowledge*

ID 314

Formulation of Anti-inflammatory Topical Application using *Acronychia pedunculata, Thespesia populnea* and *Madhuca longifolia* Extracts

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Acronychia pedunculata, Thespesia populnea and *Madhuca longifolia* are well known medicinal plants that contain anti-inflammatory activity and are widely used in Ayurveda to formulate herbal preparations. This study attempted to determine the anti-inflammatory activity of aqueous and methanolic extracts of *Acronychia pedunculata* leaves, *Thespesia populnea* leaves and bark and *Madhuca longifolia* seeds extracts by using the heat-induced ovalbumin protein denaturation method and Diclofenac sodium as a standard reference. The concentration range of aqueous and methanolic extracts of *Acronychia pedunculata* leaves, *Thespesia populnea* leaves, bark and *Madhuca longifolia* seeds was 25 µg/mL to 400 µg/mL. Topical application was prepared with a concentration range of 0.1% to 0.5% of aqueous and methanolic formulation separately with a weight of 15.0 g. The anti-inflammatory activity of the topical application was checked within the concentration range (0.5mg/mL, 0.25mg/mL, and 0.125mg/mL). The data analysis was carried out using GraphPad Prism 10 (Version 10.2.1). The stability evaluation of the topical formulation was carried out for 30 days at three different temperatures (8 ± 2°C), 28 ± 2°C(RT) and 40 ± 2°C with scheduled observations on the 1^{st}, 7^{th}, 14^{th}, and 30^{th} days. These observations were based on the physical appearance of the topical formulations, color, odor, homogeneity, texture, phase separation, and pH values. A combination of plant extracts has shown augmented anti-inflammatory activity, and it would be beneficial to incorporate a combination of extracts as a topical application to reduce inflammatory conditions.

Keywords: *anti-inflammatory activity, acronychia pedunculata, thespesia populnea, madhuca longifolia, topical application*

ID 333

In-vitro Evaluation of Anti-inflammatory Activity and Wound Healing Properties of Water Extract of Leaves of *Camellia Sinensis*

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Camellia sinensis is the most common beverage among Sri Lankans, and it is one of the main traditional export crops. In Sri Lankan traditional medicine *Camellia sinensis* is used as ayurvedic medicine to treat wound healing and inflammation conditions. *Camellia sinensis* has a vast amount of health benefits even though it is being used as a beverage widely at present. It is also used in the cosmetic industry for its antioxidant properties. However, these properties and benefits of *Camellia sinensis* are not scientifically validated yet. The study was conducted to evaluate the *in-vitro* anti-inflammatory activity of aqueous extract of *Camellia sinensis* leaves by the egg albumin assay and the red blood cell membrane (HRBC) stabilization assay. The wound healing effect of aqueous extract of *Camellia sinensis* leaves was also tested compared to the normal conditions (control). The egg albumin assay and the red blood cell membrane stabilization assay was done with a concentration series of 5000µg/mL 2500µg/ mL, 1250µg/mL, 625µg/mL 312.5µg/mL, 156.25µg/ mL and 78.125mL to detect the anti-inflammatory effect, while the wound healing effect was checked with the highest concentration (5000µg/ mL) of the aqueous extract of *Camellia sinensis.* The results showed that the aqueous extracts of *Camellia sinensis* has an IC_{50} value of 284.9µg/mL while its percentage inhibition for the highest concentration (5000µg/mL) was 82.148% by the egg albumin assay. For the human red blood cell membrane stabilization assay, anti-inflammation showed an IC_{50} value of 296.9µg/ml and 85.903% percentage inhibition for the highest concentration (5000µg/mL) of the aqueous extract of *Camellia sinensis* leaves. The aqueous extract of *Camellia sinensis* showed a marked dose-dependent anti-inflammatory activity. The results of scratch assay which was conducted with Vero cells, showed a noticeable wound healing activity with the aqueous extract of *Camellia sinensis.* The results of our study showed that the aqueous extract of *Camellia sinensis* has a good anti-inflammatory effect with wound healing properties.

Keywords: *wound healing, anti inflammation, camelia sinensis, human red blood cells stabilization assay, scratch assay*

ID 356

Enhancing the Solubility of Atorvastatin Calcium: A Comparative Study of Solid Dispersions with β-Cyclodextrin, Chitosan, and PEG-4000

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The poor water solubility of active pharmaceutical ingredients presents significant challenges in formulation development. Atorvastatin, classified as a Biopharmaceutical Classification System (BCS) class 2 drug, exhibits low water solubility, resulting in reduced bioavailability. To enhance its solubility, 1:1 solid dispersions of atorvastatin with Beta-cyclodextrin (β-CD), Chitosan, and PEG-4000 polymers were prepared using the kneading method. The resulting formulations were characterized using Fourier transform infrared spectroscopy (FTIR), UV absorptiometry, melting point analysis, and moisture content determination to confirm the formation of solid dispersions. The solubility of the prepared solid dispersions was then evaluated using an octanol/water system, with the aqueous layer varied between distilled water and buffer solutions ranging from pH 2 to pH 10 at room temperature (25°C). Absorption values of the solid dispersions were measured at 243 nm using a UV-VIS spectrophotometer to quantify the solubilized content. The solubility analysis revealed that the presence of β-CD, Chitosan, and PEG-4000 in the solid dispersion formulations significantly improved the solubility of atorvastatin compared to its pure form. Specifically, the solubility of atorvastatin calcium-PEG 4000 in distilled water increased by 91.11%, while the solubility of atorvastatin calcium-Chitosan and atorvastatin calcium-β-CD increased by 50.18% and 3.37%, respectively. Furthermore, the study found that the solubility of atorvastatin calcium in buffer solutions with physiological pH was significantly higher in the atorvastatin calcium-PEG 4000 form compared to the β-CD and Chitosan forms. PEG-4000 was identified as the most effective polymer for enhancing the solubility of atorvastatin calcium via the solid dispersion technique.

Keywords: *atorvastatin calcium, solid dispersion, kneading method, PEG-4000, beta-cyclodextrin, chitosan*

ID 418

Development of Emulgels including Natural Mucilages and Powders Extracted from Three Selected Plants in Sri Lanka, and Evaluation of Physicochemical Properties, Physical Stability, Lethality, and Drug Release Profile

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Mucilages extracted from plants play a vital role as pharmaceutical excipients. This study aimed to develop emulgels using natural mucilages, their respective powders and combinations of, *Dillenia retusa* (DR), *Aloe vera* (AV), and *Neolitsea cassia* (NC). The 09 emulsions were prepared using the continental emulsification technique, by heating the aqueous phase with Tween 80, methyl paraben, distilled water and adding it to the oil phase containing Span 20 and benzyl benzoate at the same temperature, followed by the addition of respective gelling agents. Then physiochemical properties, physical stability, *in-vitro* brine shrimp lethality assay and release profiles were evaluated. Considering physicochemical properties, NC mucilage emulgel had the lowest viscosity (345cp). Mucilage and powder emulgels of DR, AV, and NC, were brown, white, and green. A mild odor was observed in mucilage and combined DR:NC powder emulgel. The combined powder emulgel had a thicker texture compared to others. All emulgels were within pH 2.7-5. Optical microscopic observations revealed, DR powder emulgel contained larger and uniformly distributed globules. All mucilage and other powder emulgels exhibited an irregular distribution. During long-term stability evaluation, only NC powder, combined powder, and Carbopol 940 emulgels remained stable throughout 90 days. All emulgels remained stable throughout the centrifugation test (28-days), in room (28±5°C) and cold temperatures (4°C), except the AV mucilage emulgel. No changes were observed in any emulgels during cycling test. AV mucilage and powder emulgels (1g) demonstrated 90% and 60% lethality. Emulgel containing combined powder achieved the highest benzyl benzoate (drug) release percentage, reaching 58.25% after 6 hours without variations in release characteristics despite alterations of added gelling agents. Combined and NC powder exhibited acceptable gelling properties and physical stability comparable to Carbopol 940 and could be further analyzed to be commercialized as gelling agents.

Keywords: *excipients, emulgels, mucilages, powders, dillenia retusa, aloe vera, and neolitsea cassia*

ID 603

Assessment of Challenges Encountered by Community Pharmacists and Dispensing Staff when Dispensing Medicines

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Community pharmacists (CPs) and dispensing staff are considered as the primary healthcare services most approachable by patients out of all healthcare professionals due to their easy access and widespread availability without the need of scheduled appointments. This research study was conducted to assess the barriers encountered by CPs and dispensing staff when dispensing medicines and to address the measures suggested by them to overcome these challenges. A cross-sectional study was conducted among community pharmacists in Dehiwala, Boralesgamuwa, Nugegoda, Piliyandala, and Maharagama community pharmacies from October 24, 2023, to February 11, 2024. Self-administered questionnaires and structured interviews were conducted to collect data from study participants. All responses for the questionnaires were analyzed statistically using SPSS Version 25 and interviews were thematically analyzed. Out of 161 total participants, 82 took part only in the questionnaire and 79 out of 161 respondents took part in both parts: the questionnaire and the structured interview. Based on the responses for the structured interview questions, a thematic mind map was developed consisting of 3 major themes, 7 subthemes (and 14 codes). The study revealed that patient, environmental and prescription related barriers are prevalent in the community pharmacy practice, which could impact the quality of pharmaceutical services provided. Therefore, these barriers need to be overcome to enable more active participation of community pharmacists and dispensing staff in public health activities by consulting stakeholders, assessing the situation, considering alternatives and taking-action. In Sri Lanka, the majority of these challenges can be resolved through fundamental changes to the healthcare system.

Keywords: *Community pharmacists (CPs), dispensing staff, challenges, pharmacy barriers*

ID 757

Evaluation of Antioxidative Properties of Three Common Medicinal Plants Used to Treat Skin Diseases in Sri Lanka

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Skin diseases are a major global health concern, and Sri Lanka has a long history of treating skin conditions using various medicinal herbs. The current study examined the antioxidative properties of three typical medicinal plants found in Sri Lanka: the leaves of the guava plant (*Psidium guajava L.*), the lemongrass plant (*Cymbopogon citratus*), and the candle bush plant (*Senna alata*) as tested plants and the Iluk plant (*Imperata cylindrica*) as a control plant. The fresh leaves of the plants were collected from the Kandy District and authenticated by the National Herbarium, Kandy Sri Lanka. The plant extracts were prepared by weighting a 50g of finely dry powdered (*Psidium guajava, Senna alata, Crymbopogo citratus*) and prepared ethanolic crude extractions (1:5 W/v) using Soxhlet apparatus to proceed with the DPPH assay. These ethanolic extracts of plants have shown the highest antioxidant capacity. Further, the combination of all three extracts have exhibited a lower IC_{50} value (381.503 mg/ml) than lemongrass (747.29 mg/mL) and candle bush (785.26 mg/mL), suggesting a possible synergistic effect between the plant components. The positive control, ascorbic acid (IC_{50} = 399.134 mg/mL), showed strong antioxidant activity on rate with guava leaves (313.99 mg/mL). Guava leaves showed the highest activity in the anti-oxidant activity assay, followed by the combination of lemongrass and candle bush leaves. This research will be the first to compare the antioxidative properties of these three medicinal plants and the synergistic effect associated with skin diseases by filling the knowledge gap in Sri Lankan herbal medicine, exploring their potential use as natural therapeutics for dermatological conditions.

Keywords: *psidium guajava, cymbopogon citratus, senna alata*

ID 783

Antibiotics Utilization Patterns of Neonates in the Pediatric Baby Care Unit at Lady Ridgeway Hospital, Sri Lanka

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Antibiotic resistance compromises global health due to associated morbidity, mortality, and cost. Antibiotics are the most common and frequently used therapeutic agents on neonates, prescribed to overcome infections with their immature immune systems. Limited studies have been conducted on the antibiotic utilization patterns among neonates in Sri Lanka. This study aimed to identify antibiotic utilization patterns according to the World Health Organization (WHO) Access, Watch and Reserve (AWaRe) classification in the pediatric baby care unit at the Lady Ridgeway Hospital (LRH), Sri Lanka. A retrospective descriptive study analyzed 123 Bed Head Tickets (BHT) of neonates admitted to the pediatric baby care unit from October to December 2022. Out of 123 BHTs, 02 BHTs were excluded due to the incompleteness of the data. The sex ratio of the sample was nearly 2:1 (female/male). Most neonates (72.71%) were in their 1st week of life, and nearly 75% were below 2700 g, the lower normal birth weight of Sri Lankan neonates. The common indication for antibiotics among neonates was sepsis (38.84%). It was followed by pneumonia (36.36%) and respiratory infections (16.53%). The most frequently used antibiotic for sepsis was IV teicoplanin (21.7%). The three common antibiotics prescribed were benzylpenicillin (30.08%), cefotaxime (26.17%), and teicoplanin (11.3%). When considering the frequency of prescribed antibiotics, 47.66% belong to the “Access” category of antibiotics followed by 44.92% from the “Watch” category and 7.42% from the “Reserve” group. The study concludes that antibiotic use for neonates at LRH aligns with WHO AWaRe guidelines and there is a need for enhanced antibiotic stewardship, particularly in the careful monitoring of the "Watch" and "Reserve" categories.

Keywords: *WHO AWaRe classification, neonatal care, antibiotic utilization, Lady Ridgeway Hospital, Sri Lanka*

ID 200

The Relationship between Coronary Artery Calcium Score and Left Ventricular Wall Thickness: A Quantitative Evaluation using Cardiac Computed Tomography Imaging

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Abnormal thickening of the left ventricle wall and coronary artery calcification (CAC) are independent factors associated with poor cardiovascular outcomes. In identifying individuals at high risk for coronary artery disease, assessing left ventricular wall thickness (LVWT) plays a crucial role. Notably, cardiac ventricular wall thickness has been found to vary according to racial background. Therefore, the main aim of this study is to evaluate the association between coronary artery calcium score (CACS) and left ventricular wall thickness among the Sri Lankan population using cardiac computed tomography. Furthermore, demographic changes between CACS and LVWT and LVWT in the basal, mid, and apical areas were compared. A sample of 100 subjects within the age group of 18-90 yrs who have undergone clinically indicated contrast enhanced computed tomography coronary angiography (CTCA) scan have been analysed. The measurement of CACS was carried out using agaston score method and LVWT was measured semiautomatically. Individuals were categorized into four grades based on the total CACS. A positive correlation was found between total CACS and mean LVWT ($p<0.001$). Highest mean LVWT was reported in the CACS grade 4 (9.13 ± 1.15) with a significant difference compared to other three grades ($p< 0.05$). Moreover, male subjects displayed a higher total CACS and mean LVWT compared to female subjects ($p < 0.001$). Age showed a positive correlation with total CACS ($b = 0.354$, $p <0.001$) and mean LVWT ($rs(8) = 0.302$, $p = .002$). The findings of the current study indicate significant associations between CACS, LVMT, age and gender which contribute in shaping cardiovascular health outcomes while offering valuable insights for risk assessment and preventive strategies in clinical practice.

Keywords: *computed tomography coronary angiography, coronary artery calcium score, left ventricular wall thickness*

ID 410

Characterizing the Brain Network Topology in Patients with Migraine using Wavelet-based Morphometry

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There is compelling evidence that grey matter changes are associated with migraine, in turn, may alter brain network topology. The aim of this study is to characterize the brain network topology of the brains of migraine patients and healthy subjects using MRI (Magnetic Resonance Imaging) images and wavelet-based morphometry. 3D, T1W brain images were obtained from 45 patients with migraine and 46 healthy subjects. Then grey matter volume images were developed and decomposed and reconstructed at a level of n=3 using wavelet-based morphometry. 4D grey matter volumes were constructed for each subject and they were parcellated into 625 anatomical regions and structural covariance matrices were developed. Each matrix was binarized by applying a series of sparsity thresholds and global network topological metrics were computed. Finally, as the samples are normal and independent, two sample T-tests ($p < 0.05$) were performed using the area under curves of each metric for group-level comparisons of network topology. Patients with migraine showed increased small worldness ($p = 0.0029$) and global efficiency ($p = 0.0018$) compared to healthy controls. Local efficiency ($p = 0.490$) and assortativity ($p = 0.700$) have shown similar characteristics for both groups against network sparsity with no significant differences. Hierarchy ($p = 0.410$) was largely dispersed in the middle sparsity thresholds (0.15-0.35). The characteristics of synchronization ($p = 0.315$) between groups were almost the same from 0.05 to 0.4 of network sparsities. Patients with migraine exhibit better integration of information processing and wavelet-based morphometry in combination with graph theory provides valuable information on altered grey matter network topologies in migraine patients.

Keywords: *migraine, wavelet-based morphometry, brain network topology, grey matter, magnetic resonance imaging*

ID 487

An Investigation of Patient Perceptions and Experiences of Thermoplastic Mask Use in Radiotherapy Treatment for Head and Neck Cancers

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Patients with head and neck cancer undergoing radiotherapy need effective immobilization typically achieved through the use of a thermoplastic mask. The aim of this study was to investigate the patient perceptions and experiences of thermoplastic mask use in radiotherapy treatment for head and neck cancers. This study utilized qualitative methods, including face-to-face interviews, to gather data from head and neck cancer (HNC) patients undergoing radiotherapy treatment. Patients were given a questionnaire to express their experiences freely regarding the use of thermoplastic masks. The research focused on HNC patients receiving external beam radiotherapy, spanning from CT simulation to treatment sessions in the Department of Radiotherapy at Apeksha Hospital, Maharagama, Sri Lanka. Thematic analysis and chi-square tests were employed for data analysis. Patients (150) faced to interviews and six themes were identified: communication clarity and effectiveness, therapist attitude and empathy, patient comfort and well-being, therapist-patient relationship, patient engagement and participation, personalized care, and guidance. The study used chi-square tests to explore the link between demographic factors and patients' perceptions of thermoplastic masks during radiotherapy. Patients had varied experiences, with some feeling anxiety and discomfort while others found the treatment more tolerable over time. The research suggests that enhancing patient awareness, providing clear explanations, and adopting a patient-centered approach can improve the overall experience, outcomes, and quality of care in head and neck cancer radiotherapy.

Keywords: *head and neck cancer, radiotherapy, thermoplastic mask, patient comfort during immobilization*

ID 690

Gender-related Variations in Broca's and Wernicke's Areas in Healthy Adults: A Structural MRI-based Morphometric Analysis

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Language processing is vital for human communication, which majorly relies on Broca's and Wernicke's areas in the left and right hemispheres. Gender-related variations in these regions remain underexplored, particularly in the Sri Lankan population. Thus, this study aimed to investigate this research gap using structural MRI-based morphometric analysis. A retrospective cross-sectional study included 202 healthy adults (97 males, 105 females), aged 18 to 80 years. 3D T1-Weighted structural MRI data obtained from Philips Healthcare and Siemens Healthineers 3.0T MRI scanners were used in the National Hospital of Sri Lanka, Colombo and the University Hospital of General Sir John Kotelawala Defence University, Werahera, under the supervision of the Consultant Neuroradiologist and the Consultant Radiologist. FreeSurfer advanced neuroimaging software package (version-7.4.1) via Windows Subsystem for Linux (WSL) was used for the brain reconstruction process to measure the cortical average thickness, the relative cortical surface area, the relative cortical volume and the cortical mean curvatures for specific boundaries. Statistical analysis was conducted using IBM SPSS Statistics software (version-27.0). Statistically significant gender-related variations were found, with females exhibiting higher Broca average thickness in both hemispheres compared to males ($p = 0.001$, $p = 0.046$). Significant negative correlations with age distributions of the relative cortical volume and the cortical average thickness were observed for Broca and Wernicke areas in both hemispheres. The relative cortical volume of the left Broca area was significantly higher than the right ($p < 0.001$), while the relative cortical volume of the right Wernicke area exceeded the left ($p < 0.001$). Study findings show the measurements of Broca's area was significantly larger in adult females than males. Significant negative correlations with age distribution show age-related brain morphometric changes for both regions. The above results prove that gender influences in anatomical variations in Broca's and Wernicke's areas among healthy adults in Sri Lanka.

Keywords: *broca and wernicke areas, gender-related variation, structural magnetic resonance imaging, neuroimaging*

ID 749

A Comparison of Three-Dimensional Digital Breast Tomosynthesis (3D-DBT) and Two-Dimensional Full-Field Digital Mammography (2D-FFDM) in Characterization of Breast Lesions

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The shape of mammographically identified breast lesions serves as a crucial indicator in determining whether a lesion is benign or malignant. The study aimed to compare the efficacy effectiveness of 3D-DBT versus 2D-FFDM in characterizing breast lesions by shape. The study involved included mammography images of 54 subjects with 32 round and 22 spiculated lesions. Mammographic images were analysed using Fiji ImageJ software. The mean density value of round shaped lesions in 2D FFDM and 3D DBT were 2328.38 (± 549.10) and 493.47 (±55.37) with mean ratios of density values as 2.28 (±0.65) and 1.38 (± 0.17). For spiculated shaped lesions in 2D FFDM and 3D DBT, the mean density value was 2499.78 (±451.85) and 565.61 (±222.27), with a mean ratio of density values 2.48 (±0.55) and 1.51(± 0.29). The mean density value of the round shape lesions in 2D and 3D were 2382.20 (±587.15) and 500.18 (± 56.03) for CC view while they were 2274.57 (±511.88), 486.76 (± 54.75) for MLO view respectively. Significant age-based variation was observed between round (mean age 55) and spiculated (mean age 60) lesions, while no significant difference in lesion shape was found regarding Compressed Breast Thickness values. There was insignificant difference in Mean Glandular Dose and Entrance Surface Dose between 2D and 3D for both type lesions ($P > 0.05$). Hence, 2D FFDM exhibited higher density values compared to 3D DBT, 2D FFDM is valuable for distinguishing between malignant and benign breast lesions based on density values, offering enhanced structural details.

Keywords: *breast cancer, diagnostic accuracy, mammography, lesion shape, density values*

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