



**Proceedings of 3<sup>rd</sup> International Research Symposium  
Faculty of Allied Health Sciences 2025**

**University of Ruhuna**



**‘Combating Healthcare Challenges through  
Research and Innovation’**

**August 07, 2025**

**Faculty of Allied Health Sciences, University of Ruhuna,  
Galle, Sri Lanka**

**iRuFARS 2025**

**‘Combating Healthcare Challenges through Research  
and Innovation’**

**Proceedings of 3<sup>rd</sup> International Research Symposium**

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## **Foreword**

The 8<sup>th</sup> Research Symposium and 3<sup>rd</sup> International Conference of the Faculty of Allied Health Sciences, University of Ruhuna, Galle, Sri Lanka was held on 7<sup>th</sup> August 2025. The 30 oral and 53 poster presentations, covering four different themes from diverse disciplines of Allied Health Sciences, have undergone a robust peer review process and have been included in the conference proceedings book. The abstracts have been edited to ensure language accuracy and adherence to the proceedings format. The responsibility of the contents of the abstracts included in this proceedings, remains with the respective authors. No part of this serial publication will be published in any other form.

When citing the abstracts published, please refer to the serial publication as 'Proceedings of the 3<sup>rd</sup> International Research Symposium, Faculty of Allied Health Sciences, 2025, University of Ruhuna'.

## **Editorial Board**

### **iRuFARS 2025**

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## Message from the Vice Chancellor and the Chief Guest



It is with great pleasure that I extend my warm wishes to the Faculty of Allied Health Sciences on the occasion of iRuFARS-2025, which continues to serve as a vital platform for promoting research excellence, research-driven discussions, and innovations within the field of health sciences.

We are living in an era where the healthcare sector is undergoing rapid transformations, driven by the upsurge of emerging infectious diseases, aging populations, growing health disparities, and continuously evolving medical technologies. Addressing these issues requires not only clinical expertise but also a strong foundation of scientific research and a commitment to innovation. Hence, the chosen theme “Combating Healthcare Challenges through Research and Innovation” powerfully highlights the dual imperative of scientific research and continuous innovation as essential tools to meet these challenges.

By establishing research and innovation as complementary themes, iRuFARS 2025 not only addresses demanding healthcare concerns of today but also empowers researchers and practitioners to shape the future of healthcare delivery and education.

I commend the faculty for establishing this timely and meaningful initiative, promoting rigorous inquiry and fostering cross-disciplinary engagement. I am confident that this year’s symposium will further strengthen the role of the university in advancing healthcare knowledge and practice both nationally and globally.

**Senior Professor P.A. Jayantha**  
**Vice Chancellor, University of Ruhuna**

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## Message from the Dean



I am indeed delighted as the Dean, Faculty of Allied Health Sciences, University of Ruhuna to send this message to the 3<sup>rd</sup> International Research Symposium of the Faculty of Allied Health Sciences (iRuFARS 2025), University of Ruhuna, under the theme ‘Combating Healthcare Challenges through Research and Innovation’.

Since its inception, the faculty has actively promoted research by organizing an annual research symposium ‘RuFARS’, which has evolved over time into an internationally recognized event. So far, RuFARS was conducted at the auditorium of Faculty of Medicine, Karapitiya. To meet the increasing demand for space and student welfare, the faculty constructed a new, state-of-the-art building in Walahanduwa, Galle, where academic activities commenced in March 2025. This year, we are overjoyed to host the 3<sup>rd</sup> iRuFARS in the auditorium of newly built faculty building complex.

iRuFARS is a multidisciplinary research symposium which covers all fields of Allied Health Sciences. The symposium proceedings include findings of many research projects of undergraduates of Faculty of Allied Health Sciences, University of Ruhuna and academics, healthcare professionals, researchers and policy makers as well. Over the last few years, undergraduate research work has immensely contributed to strengthen the research culture and it is inspiring to notice that the majority of the publications in the proceedings of research symposia have showcased the research potential and the talents of the graduating students.

The primary aim of this symposium is to provide a reputed scientific forum for researchers to disseminate their research findings while fostering an environment to gain exposure to the global arena of research and innovation. This year, more than 100 scholars have submitted abstracts for the symposium. This research conference is an ideal platform as well to make connections and hopefully, you all will take this opportunity to interact and develop friendly relationships, establish networks and to explore win-win situations.



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I wish the contribution from the Keynote Speakers, Dr. Masataka Michigami, Department of Biological Chemistry, Osaka Metropolitan University, Japan and Dr. Raphael M. Zellweger, Senior Research Scientist, Epidemiology, Public Health & Impact (EPIC), International Vaccine Institute (IVI), Seoul, Korea would enrich the research culture of our faculty and provide invaluable opportunities for the undergraduates and academics to design their research activities and encourage the faculty research culture.

My sincere gratitude goes to the Vice Chancellor of the University of Ruhuna for his unceasing moral support in organizing this event. The symposium would not have been possible without the enthusiasm and hard work of a number of colleagues. I would like to express my heartfelt appreciation and gratitude to Dr. K. B. Gunawardena, Chairperson and all the committee members of the iRuFARS 2025 for their untiring efforts to make it a reality. The excellent contribution of the reviewers and the members of the editorial board is highly appreciated.

I take this opportunity to congratulate all the presenters and wish them all very best of luck. I am confident that you will find an exciting and scientifically challenging and impactful conference.

**Professor Imendra Kotapola**  
**Dean, Faculty of Allied Health Sciences**  
**University of Ruhuna**



## Message from the Chairperson iRuFARS 2025



It is with great pride and joy that I welcome you to the 3<sup>rd</sup> International Research Symposium and the 8<sup>th</sup> consecutive research conference of the Faculty of Allied Health Sciences at the University of Ruhuna, iRuFARS 2025, under the vital theme of ‘Combating Healthcare Challenges through Research and Innovation’. We are excited to host this event at our very own Faculty premises at Wahanduwa, Galle for the very first time.

This year, the pre-congress workshop of this conference is organized under three plenary sessions: Grooming of infections, Combating antimicrobial resistance in healthcare, and Modern art of healthcare career, by a team of international and local experts. Therefore, this symposium will provide opportunities for undergraduates and fellow researchers to explore knowledge gaps, build collaborations, and support the upliftment of healthcare services and quality of life for people.

The launching of ‘The Sri Lankan Journal of Allied Health Sciences’ in parallel to this Research Symposium makes the event historically and scientifically significant. I extend my sincere gratitude to the editor-in-chief and the editorial board for their extreme dedication and perseverance to achieve this task.

I am very grateful to the Vice-chancellor of the University of Ruhuna, the Dean of the faculty, keynote speakers, resource persons, reviewers, evaluators, and authors for being a part of this important journey.

My special thanks go to our dear students for your contribution to raising funds, performing, decorating, and helping in various ways to make this event a success. I hope you gain true benefits from this effort. Finally, my sincere thanks to the organizing committee of iRuFARS 2025 for your hard work, commitment, and tireless efforts in making this event a reality.

I wish you all a productive and rewarding experience!

**Dr. K. B. Gunawardana**  
**Chairperson - iRuFARS 2025**

## Keynote Address

### Post-antibody drugs: Generation of VEGF-targeting helix-loop-helix Peptides for Tumor Growth Inhibition

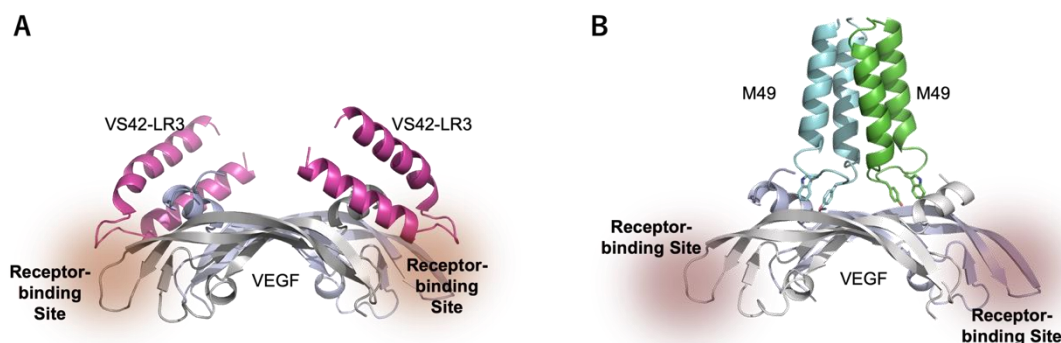


At present, monoclonal antibodies are the most successful drugs for molecular-targeted therapy. However, antibodies have several limitations such as high immunogenicity and high manufacturing costs. Since these drawbacks are due to their large molecular size (~150 kDa) and complicated molecular composition, it is of great interest to develop downsized alternative affinity molecules based on the non-immunoglobulin folds. Thus, we have developed a conformationally constrained peptide with a *de novo* designed helix-loop-helix (HLH) structure (~4 kDa). In this study, we generated molecular-targeting HLH peptides by directed evolution of the HLH peptide libraries against human vascular endothelial growth factor-A (VEGF).

A VEGF-targeting HLH peptide, VS42-LR3, inhibited VEGF/VEGF receptor interaction ( $IC_{50} = 37$  nM) and suppressed tumor growth in a murine xenograft model of human colorectal cancer [1]. The loop region of VS42-LR3 peptide was proposed to be a hot spot for VEGF binding because a consensus sequence was identified in the loop region in a process of directed evolution. However, interestingly, the crystal structure of a VS42-LR3/VEGF complex (PDB code: 9JU1) showed that the peptide loop region did not directly interact with VEGF (Figure 1A) [2]. Then, we examined functional impacts of the peptide loop region on the VEGF binding. The mutational studies, thermodynamic analysis, and molecular dynamic simulations provided information on what is a driving force for the peptide/VEGF complex formation.

Another VEGF-targeting HLH peptide, M49, exhibited strong binding affinity to VEGF ( $K_D = 0.87$  nM) and did not inhibit VEGF/VEGF receptor interaction. Here, we examined to expand the drug modality of HLH peptides to peptide-drug conjugates (PDCs) for targeted intracellular drug delivery. M49-drug conjugate forms a ternary complex with VEGF and VEGF receptors on a cell surface followed by internalization into cells through the receptor-mediated endocytosis to inhibit cell proliferation [3]. Despite its small molecular size, M49 exhibited an antibody-like affinity to VEGF and VEGF-specific binding observed by a human proteome microarray. Of particular interest is a molecular basis of the binding mode of M49 to provide cellular uptake ability, high binding affinity, and high specificity for VEGF. Here, we determined the crystal structures of M49

in a complex with VEGF at 1.5 Å resolution using a space-grown protein crystal (PDB code: 9KKU) (Figure 1B). The present structural studies gave a structural insight into the HLH peptide folding and tight binding mechanisms [4]. The mutational studies and thermodynamic analysis will also be discussed in detail. These findings would open new possibilities for peptide drug design.



**Figure 1.** Crystal structure of VS42-LR3 (A) and M49 (B) in complexed with VEGF.

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## Keynote Address

### Catalyzing Global Antimicrobial Resistance Control through Vaccines



Bacterial infections are estimated to cause 7.2 million deaths yearly, and 4.95 million of these are associated with antibiotic-resistant bacteria. New estimates predict that this number could almost double by 2050. Antimicrobial resistance (AMR), the process by which pathogens evolve to resist treatment, is reducing the efficacy of current antimicrobials and making infections more difficult to treat. Although AMR is a natural process, it is greatly exacerbated by use, overuse and misuse of antibiotics.

AMR is a global health threat, but the brunt of drug-resistant infections is projected to fall on Africa and Asia. Weaker healthcare systems, sub-optimal infection prevention measures, inadequate water, sanitation, and hygiene (WASH) infrastructures, and lack of access to basic health services such as diagnostics, quality antibiotics, and vaccines impact AMR in these regions. In Sri Lanka alone, the Institute for Health Metrics and Evaluation suggests that between 2,607 and 10,039 people died due to antimicrobial resistance.

While summers are getting hotter year after year, and we experience increasingly extreme weather events in our daily lives, there are reasons to believe climate change impacts AMR as well. This is particularly concerning in a highly climate-sensitive country like Sri Lanka. As a tropical island in the Indian Ocean, Sri Lanka has consistently been placed among the top ten countries at risk of extreme weather events by the Global Climate Risk Index.

Vaccination is a critical tool to limit AMR by preventing the emergence and transmission of drug-susceptible and drug-resistant infections and the associated antibiotic use. Vaccination can also limit incorrect prescription and antimicrobial usage (AMU) by preventing infections from non-bacterial pathogens. Recent modeling studies quantifying the impact of vaccines on AMR

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highlight their value in reducing antibiotic use and averting cases and deaths from drug-resistant infections.

While universal pediatric vaccination is projected to prevent 181,500 deaths linked to AMR annually, much of the existing data on vaccine impact on AMR comes from theoretical modeling. To guide vaccination decisions and AMR mitigation strategies at a regional or national level, it is crucial to conduct real-world, population-level studies using consistent and standardized metrics. A recent WHO report, which modeled the effects of vaccines on AMR and AMU, highlighted the importance of including AMR endpoints in clinical trials where possible. The report also underlined the necessity of developing comprehensive guidelines for selecting and feasibly measuring these AMR endpoints in clinical trials, a recommendation I believe should also extend to post-licensure vaccine projects.

The Sri Lankan Global Action Plan against AMR (GAP-AMR) cites investment in new vaccines as a key strategic objective, explicitly recognizing the potential of vaccination to curb the AMR crisis. With a robust public health system, excellent vaccination coverage, and strong research capacities across the country, Sri Lanka could be a regional leader in generating data on the role of vaccines in AMR, expanding the evidence base needed to guide local and global policy on AMR control.

**Dr. Raphael M. Zellweger**  
**Senior Research Scientist**  
**Epidemiology, Public Health & Impact (EPIC)**  
**International Vaccine Institute (IVI)**  
**Seoul, Korea**

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## Message from Chief Guest, Pre-congress Workshop, iRuFARS 2025



It is with deep appreciation and great pride that I join you today at the Pre-congress Workshop of the 3<sup>rd</sup> International Research Symposium of the Faculty of Allied Health Sciences, University of Ruhuna. This prestigious gathering reflects a bold commitment to academic excellence, scientific inquiry, and the future of healthcare education in Sri Lanka.

The theme of this workshop strongly resonates with the changing needs of modern healthcare, emphasising infection control, antimicrobial resistance, and professional development. These are more than just academic issues; they are urgent public health priorities that require coordinated efforts, thorough research, and innovative ideas.

Our allied health professionals are the unsung backbone of clinical care. Your roles in diagnostics, rehabilitation, patient support, and community engagement are central to a resilient health system. As we face complex challenges such as pandemics, rising antimicrobial resistance, and rapid technological transformation, your contribution becomes more essential than ever.

To the students and early-career professionals here: seize this opportunity. The knowledge you acquire today will not only shape your careers but also influence the future of patient care in our country. Engage completely, question confidently, and think beyond borders.

I commend the Faculty of Allied Health Sciences for organizing this impactful platform for professional growth and collaboration. The SLMA is ready to support such endeavours that foster ethical, competent, and research-oriented healthcare leaders.

Let this workshop be a catalyst for advancing health, equity, and excellence.

**Dr. Surantha Perera**  
**President, Sri Lanka Medical Association**

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## **Oral Presentations**



**Theme: Pharmacy and Pharmaceutical Sciences**

OP 01

## Generic Drug Acceptance: A Study from Selected State Community Pharmacies in Peradeniya and Jaffna

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**Background:** Generic drugs are cost-effective, bioequivalent alternatives to brand-name medications, and are comparable in quality, efficacy, and safety. Despite their benefits, uptake is hindered by negative patient perceptions and limited awareness. In Sri Lanka, where healthcare affordability is a major concern, increasing generic use could significantly reduce healthcare costs. Thus, evaluating patient perception and acceptance is crucial.

**Objectives:** To assess patients' perceptions and acceptance of generic drugs in selected state community pharmacies in Peradeniya and Jaffna and to identify factors influencing acceptance

**Methods:** A descriptive, cross-sectional survey was conducted between August and October 2024 at two state-owned pharmacies (*Rajya Osusala*) in Peradeniya and Jaffna. Patients obtaining prescription medications were recruited using convenience sampling. Data were collected using a validated, interviewer-administered questionnaire, adapted from a previously published study. The questionnaire underwent expert validation and pre-testing to suit the local context and study objectives. Data were analysed using SPSS version 26.0.

**Results:** Of the 390 participants, 67.9% (n=265) reported using generic drugs, and 61.3% (n=239) expressed confidence in their efficacy. Affordability was the primary reason for preferring generics (41.8%, n=163). However, concerns regarding quality (23.8%, n=93), effectiveness (23.1%, n=90), and side effects (16.7%, n=65) remained. Only 43.1% were willing to use generics for serious or life-threatening conditions. Individuals with higher education reported greater use of generic drugs ( $p=0.017$ ), whereas preferences for branded drugs and perceptions of efficacy, quality and side effects showed no significant associations ( $p>0.05$ ). Physician recommendation strongly influenced decisions: 58.7% (n=229) preferred confirmation from a doctor before switching to a generic, compared to 41.0% (n=160) who would switch based on a pharmacist's recommendation.

**Conclusions:** Generic drug acceptance was relatively high among patients. Educational level and physician endorsement significantly influenced acceptance. Enhanced awareness and healthcare provider-led interventions are recommended to improve generic drug acceptance.

**Keywords:** Acceptance, Generic drugs, Healthcare cost, Patient perception

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OP 02

## Elucidation of Intracellular Pathways Mediating Myricetin-induced Insulin Secretion in Pancreatic INS-1 $\beta$ -cells

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**Background:** Myricetin (MyR), a bioflavonoid known for its broad therapeutic spectrum, has shown promising anti-diabetic potential, making it a viable candidate for managing Type 2 Diabetes Mellitus (T2DM). While numerous *in-vitro* and *in-vivo* studies support its role in glucose homeostasis, the precise molecular mechanisms underlying its action remain inadequately explored.

**Objective:** To identify the intracellular signaling pathways involved in MyR-induced insulin secretion in INS-1  $\beta$ -cells, with a focus on identifying key molecular effectors and their pharmacological modulation

**Methods:** A rigorous experimental approach was used, incorporating the MTT assay (50,000 INS-1 cells/well) to assess cell viability, and a static glucose-stimulated insulin secretion (GSIS) assay (100,000 INS-1 cells/well) under 2 mM and 20 mM glucose to quantify insulin secretion after exposure to MyR (5-160  $\mu$ M). Pharmacological inhibitors, including H-89 (PKA inhibitor, 50 $\mu$ M), KN-62 (CaMKII inhibitor, 10  $\mu$ M), GO6976 (PKC inhibitor, 1 $\mu$ M), U0126 (MEK inhibitor, 10 mM), Nifedipine (L-type VGCC blocker, 10  $\mu$ M), EGTA (extracellular  $\text{Ca}^{2+}$  chelator, 2 mM), and Diazoxide (K<sub>ATP</sub> channel opener, 50  $\mu$ M) were used to dissect the signaling pathways modulated by MyR.

**Results:** MyR significantly enhanced insulin secretion in a glucose-dependent manner, with peaking at a non-toxic dose of 80  $\mu$ M (7.652 $\pm$ 0.3315%  $\mu$ g/100,000 INS-1 cells/hour) in 20 mM glucose. Insulin secretion levels remained unchanged in the presence of L-type VGCC and K<sub>ATP</sub> channel inhibitors, indicating that MyR's insulinotropic effect is independent of these pathways. In contrast, the response was markedly reduced upon inhibition of PKA, CaMKII, PKC, and MEK pathways, indicating their pivotal roles in MyR-mediated  $\beta$ -cell signaling.

**Conclusions:** MyR induces insulin secretion in a glucose-dependent manner and activating multiple kinase pathways. Further investigations using  $\beta$ -cells and animal models are warranted to fully elucidate the physiological relevance of these mechanisms. These insights could pave the way for uncovering MyR-based therapies that are both effective and affordable for managing T2DM.

**Keywords:** *Calcium dynamics, Insulin secretion, Myricetin, Pancreatic INS-1  $\beta$ -Cells, Type 2 diabetes mellitus*

OP 03

***In-vitro* Antimicrobial, Antioxidant, and Anticancer Activity of *Canarium zeylanicum*, *Pterocarpus marsupium*, and *Dipterocarpus zeylanicus* Resins**

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**Background:** Sri Lanka is home to numerous endemic plant species with potential therapeutic benefits. These plants are sources for novel chemical compounds with biological activity. This study investigates the biological properties of resins from three endemic plants, an area that has received limited scientific attention.

**Objectives:** To evaluate antimicrobial, antioxidant, and anticancer activities of *Canarium zeylanicum* (Kekuna), *Pterocarpus marsupium* (Gammalu), and *Dipterocarpus zeylanicus* (Hora) resins

**Methods:** Crude extract of resins from *Canarium zeylanicum*, *Dipterocarpus zeylanicus* and *Pterocarpus marsupium* were prepared via sequential extraction using hexane, ethyl acetate, and methanol separately. Antimicrobial assays were done by agar disk diffusion method against Gram-positive *Staphylococcus aureus*, *Bacillus subtilis*, Gram-negative *Pseudomonas aeruginosa*, *Escherichia coli*, and fungal species *Candida albicans*, *Candida tropicalis*. Gentamicin and fluconazole were used as positive controls for antibacterial and antifungal assays, respectively; solvent-only discs served as negative controls. Antioxidant activity was evaluated by 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging method with ascorbic acid as a reference over a concentration range of 10 - 0.08 mg/mL. The anticancer potency of crude extracts (50-0.4 mg/mL) was assessed on BT-474 breast cancer cells, with cell viability assessed by dimethylthiazol-carboxymethoxyphenyl-sulfophenyl-tetrazolium assay.

**Results:** All extracts showed antimicrobial activity against at least one of the microbes tested. Methanol extract of *P. marsupium* displayed the strongest inhibition against Gram-positives, *S. aureus* (17.2±0.2 mm) and fungi *C. albicans* (15.1±0.1 mm), while ethyl acetate extract of *C. zeylanicum* was most effective against Gram-negatives, *P. aeruginosa* (14.2±0.2 mm). The methanol extract of *P. marsupium* showed an excellent DPPH radical scavenging activity (IC<sub>50</sub>: 0.011 mg/mL). All extracts showed anticancer activity. The highest anticancer activity was in the *D. zeylanicus* hexane extract, even at 0.4 mg/mL level.

**Conclusions:** The crude resin extracts showed antimicrobial, antioxidant, and anticancer properties. These results highlight the importance of further research to isolate and characterize novel bioactive compounds.

**Keywords:** Anticancer, Antimicrobial, Antioxidant, Natural, Resin

OP 04

## Formulation of Pre-load Powder Mixture Using Commercially Available Ingredients for Pre-operative Patients

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**Background:** In Sri Lanka, pre-operative patients are subjected to mandatory 6-8 hour fasting, leading to significant discomfort. Following Enhanced Recovery After Surgery (ERAS) protocols, the use of carbohydrate-rich clear liquid is recommended to improve patient comfort.

**Objective:** To develop a carbohydrate-rich pre-load drink using commercially available ingredients: corn (*Zea mays*) and cassava (*Manihot esculenta*) to support pre-operative patient care

**Methods:** Corn and cassava starches were wet milled and were enzymatically hydrolyzed separately using  $\alpha$ -amylase to produce maltodextrin. Each 50 g pre-load powder mix was packed in low-density polyethylene bags and sealed in tetra aluminum poly bags for storage. Standard AOAC methods were used to analyze proximate composition, physico-functional properties (particle size, bulk and tapped density, water and oil absorption capacities), microbial quality (total plate count, yeast and mold, *E. coli*, coliforms, *Staphylococcus aureus*), and real-time shelf-life over two months.

**Results:** The carbohydrate content of corn- and cassava-based powders was  $99.89 \pm 0.59\%$  and  $98.66 \pm 0.86\%$ , respectively. Crude fiber, protein, and fat contents were minimal. Physico-functional analysis showed total soluble content of  $1.16 \pm 0.05$  (corn) and  $1.80 \pm 0.10$  °Bx (cassava), optimal solubility at 60 °C, pH values near neutral, and similar tapped densities ( $0.91 \pm 0.00$  g/cm<sup>3</sup>). Particle size distributions of  $80.00 \pm 0.00\%$  for both corn and cassava pre-load powder mixes were determined using the sieve analysis method using calibrated sieves. Water ( $1.83 \pm 0.00\%$ ) and oil absorption ( $0.73 \pm 0.00\%$ ) capacities were slightly higher in cassava-based powder. Dextrose equivalent values were  $16.94 \pm 0.08$  and  $18.12 \pm 0.17$ , respectively. Microbial testing showed no detectable bacteria, yeast, or mold ( $<1.0$  log CFU/g) throughout the storage period.

**Conclusions:** Corn and cassava can be effectively used to develop a carbohydrate-rich pre-load drink powder for pre-operative patients. The formulation is microbiologically stable, aligns with ERAS guidelines, and offers a promising alternative to reduce fasting-related discomfort in surgical settings.

**Keywords:** Corn and cassava starch, Dextrose equivalent, Maltodextrin, Pre-operative discomfort

OP 05

## Medication Appropriateness and Medication Adherence of Heart Failure Patients: A Cross-sectional Observational Study

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**Background:** Heart failure is a global health burden with increasing prevalence and new incidences. It is a chronic cardiovascular disease that requires long-term treatment with appropriate medications. Hence, prescribing appropriate medications and the patient's adherence to medications are essential in achieving optimum treatment outcomes among heart failure patients.

**Objectives:** To assess the medication appropriateness, medication adherence and evaluate the influence of socio-demographic factors on medication adherence of heart failure patients

**Methods:** This was a cross-sectional observational study conducted at the cardiovascular clinic of National Hospital Kandy. Patients diagnosed with heart failure, older than 18 years were recruited after obtaining informed written consent. Appropriateness of clinic medications was assessed using the Medication Appropriateness Index (MAI); higher MAI scores indicated low appropriateness. A detailed medication history was obtained from each participant for the medication adherence assessment using the Brief Medication Questionnaire (BMQ). Patients were classified into four adherence-related categories based on their scores for each screen in BMQ. Associations between medication adherence and socio-demographic factors were evaluated.

**Results:** The total number of study participants was 325. The mean $\pm$ SD MAI score was 0.56 $\pm$ 0.25 (median:0.55, IQR:0.71-0.40). The mean $\pm$ SD total BMQ score was 1.16 $\pm$ 0.10 (median:1.00, IQR:1.70-0.43). Most of the patients were probable poor adherents (52.0%) followed by probable adherents (20.9%), poor adherents (15.4%) and the least complete adherents (11.7%). Statistically significant associations were observed between total BMQ score and age ( $p=0.039$ ), gender ( $p=0.003$ ) and education level ( $p=0.027$ ).

**Conclusions:** Appropriateness of prescribed medicines in the clinic was acceptable. However, medication adherence among heart failure patients was considerably poor whereas age, gender, and education level had influenced medication adherence. The importance of interventional studies to improve medication adherence in heart failure patients is apparent.

**Keywords:** *Associations, Heart failure, Medication adherence, Medication appropriateness, Socio-demographic factors*

OP 06

## Medication Adherence and Medication Appropriateness among Patients Receiving Insulin Therapy for the Management of Diabetes Mellitus: A Cross-sectional Observational Study

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**Background:** Diabetes Mellitus (DM) is a common chronic noncommunicable disease with increasing prevalence leading to serious complications. Effective management of DM depends on the use of appropriate medications and the patients' adherence to the prescribed medication regimen.

**Objectives:** To assess medication adherence, medication appropriateness, and the impact of sociodemographic factors on medication adherence in patients receiving insulin therapy for diabetes management

**Methods:** A cross-sectional observational study was conducted among the patients receiving insulin therapy for the management of DM in the Diabetes and Endocrinology Unit of National Hospital Kandy, Sri Lanka. Eligible patients were selected using a simple randomization method and recruited after obtaining written and verbal consent. A complete medication history was obtained to assess their medication adherence using the Brief Medication Questionnaire (BMQ). Patients were categorized into four adherence groups based on their score for each screen in BMQ. The relationship between sociodemographic factors and medication adherence was evaluated. Appropriateness of the clinic medication list was assessed using the Medication Appropriateness Index (MAI).

**Results:** A total of 385 patients were recruited. The mean±SD BMQ score was 1.24±1.05, and optimal adherence was defined as a BMQ score of zero. Most of the patients were probable poor adherents (n=168, 43.6%), followed by probable adherents (n=103, 26.8%), poor adherents (n=79, 20.5%) and complete adherents (n=35, 9.1%). Medication adherence was significantly influenced by the age ( $p<0.001$ ), marital status ( $p<0.001$ ), and education level ( $p<0.001$ ). The mean±SD MAI score was 0.28±0.23.

**Conclusions:** Medication adherence was sub-optimal among most participants and was impacted by some sociodemographic features. The clinic medication list showed considerable appropriateness. However, it can be further improved to be ideal according to current treatment guidelines. These findings highlight the need to assess medication adherence and medication appropriateness to enhance patient care and therapeutic outcomes.

**Keywords:** Diabetes mellitus, Insulin, Medication adherence, Medication appropriateness

OP 07

## Preparation, Characterization, Release Kinetics, Antiglycation Activity and Stability Assessment of *Catharanthus roseus* L. Extracts Encapsulated Alginate Nanoformulations

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**Background:** The inclusion of *C. roseus* extracts into an alginate matrix is identified as a promising strategy for the development of drug candidates, which may help to overcome the limitations commonly associated with plant extracts.

**Objectives:** To prepare and characterize *C. roseus* incorporated alginate nanoformulations using aqueous, ethanol, 50% ethanol, and 50% acetone extracts, and to assess their *in-vitro* release kinetics, antiglycation activity, and accelerated stability

**Methods:** The *C. roseus* extracts encapsulated alginate nanoformulations (CR-ANs) were prepared using ionic gelation technique and characterised. The *in-vitro* release of polyphenols from CR-ANs was determined at pH 1.2 and pH 6.8 and the data were fitted into zero-order, first-order, Hixon-Crowell and Higuchi models. The antiglycation activity of CR-ANs was assessed. Accelerated stability of *C. roseus* ethanol extract encapsulated nanoformulation was evaluated based on total polyphenol content and thin layer chromatography fingerprints over a month, at 27 and 5 °C.

**Results:** Ethanol, 50% ethanol, and 50% acetone *C. roseus* extracts encapsulated alginate nanoparticles obtained more than 80% of encapsulation efficiency. Their loading capacities were determined as 0.9-7%. CR-ANs exhibited a mean particle size of 110-220 nm with a narrow distribution and zeta potentials ranged from -22.7 to -35.0 mV. The release of polyphenols from the alginate matrix was controlled and pH-responsive after the encapsulation. Aqueous and ethanol extracts of *C. roseus* when encapsulated in alginate nanoformulation fitted best with the first order model, obtaining an R<sup>2</sup> value of 0.98 compared to other plant extracts. The antiglycation activity of aqueous, ethanol, and 50% acetone *C. roseus* extracts encapsulated alginate nanoformulations was significantly ( $p < 0.05$ ) increased at 45.79, 89.16, and 70.93% compared to their crude extracts (IC<sub>50</sub>: 2.14, 2.86, and 1.00 mg/mL), respectively. Phytoconstituents in ethanol *C. roseus* extract were preserved upon encapsulation over one month at 27 and 5 °C.

**Conclusion:** The promising findings of ethanol extract of *C. roseus* encapsulated alginate nanoparticles would facilitate the development of a stable drug lead candidate with controlled release of polyphenols and improved antiglycation activity.

**Keywords:** Alginate nanoparticles, *Catharanthus roseus* L., Ethanol extract

**Acknowledgment:** AHEAD/DOR 15 for financial assistance



## **Theme: Nursing and Midwifery**

OP 08

## Age-related Bone Mineral Density Trends in Sri Lankan Adults: Defining Population-specific Reference Values

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**Background:** Absence of normative bone mineral density (BMD) data for Sri Lankans has led to reliance on Caucasian references, misestimating BMD in this population.

**Objectives:** To establish age-related BMD trends in Sri Lankans for optimal bone health management

**Methods:** This retrospective, correlational study analysed data from 11,925 patients (4,549 men, 7,376 women) aged 20-80 years, who underwent lumbar and hip scans during health check-ups at five private institutions in Western Province (2015-2024). Subjects with affecting bone metabolism were excluded. BMD measurements obtained using Hologic DXA scanners, demographic, clinical data collected via standardised questionnaire. Subjects grouped by decade to maintain consistency with Caucasian references.

**Results:** For males, mean lumbar BMD values (g/cm<sup>2</sup>) across age groups were 1.004 (21-30 years), 1.019 (31-40 years), 1.004 (41-50 years), 0.979 (51-60 years), 0.993 (61-70 years), and 0.995 (71-80 years). For women, values were 0.974, 0.982, 0.978, 0.874, 0.805, and 0.786 g/cm<sup>2</sup>. Compared to Caucasians, Sri Lankan BMD values were significantly lower, except in elderly men and peri/post-menopausal women's hip. Peak lumbar total BMD observed in 31-40 years. The greatest decline in spinal BMD occurred between the fifth and sixth decades, with a reduction of 10.4% per decade in women and, it was 2.5% per decade in men. Statistically significant difference in BMD was observed between males and females, across all regions ( $p < 0.05$ ). Spinal BMD was correlated positively with weight ( $r = 0.47$ ) ( $p < 0.05$ ) and height ( $r = 0.39$ ) ( $p < 0.05$ ). In postmenopausal women, spine and hip BMD were negatively correlated with years since menopause. Among women, strongest correlation between weight and hip BMD occurred in 41-50 years. Nonlinear cubic regression model demonstrated better fit than the linear model.

**Conclusion:** These findings establish normative BMD values for Sri Lankans, highlighting age-related trends and differences from Caucasians. Future research should include all provinces for broader applicability.

**Keywords:** Bone mineral density, DXA, Healthy, Normative

OP 09

## Perceived Barriers to Effective Pain Management among Nursing Officers Working in Intensive Care Units at National Hospital Galle, Sri Lanka

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**Background:** Effective pain management in Intensive Care Units (ICUs) is critical, yet nursing officers often face various perceived barriers that hinder optimal patient care. These barriers, which may include inadequate resources, insufficient training, and communication challenges, can compromise the delivery of timely and appropriate pain relief, affecting patient outcomes.

**Objectives:** To assess the perceived barriers to effective pain management among nursing officers in the ICUs at National Hospital Galle (NHG), Sri Lanka

**Methods:** A descriptive cross-sectional study was conducted among 164 nursing officers working at ICUs at NHG, including Emergency Trauma, Neuro Trauma, Neonatal, Pediatric, and Main Intensive Therapy Units, using convenience sampling technique. Data were collected using a researcher developed, validated, self-administered questionnaire and analysed using SPSS version 25.0, incorporating descriptive statistics and inferential statistics. The questionnaire covered demographic information, perceived barriers to ICU pain management, the availability and accessibility of related resources, and the techniques used for managing pain.

**Results:** Most participants were female (90.9%, n=149). A significant portion had over five years of total professional experience (62.7%, n=103), and an even larger percentage had more than five years of experience working in the ICU (74.9%, n=123). Most of the participants had not participated in pain management programs (82.3%, n=135). The results showed that the most effective pain management technique was pharmacological intervention (100%). The study discovered highly influenced barriers for effective pain management in ICU at NHG are shortage of nursing staff, lack of resources, inadequate in-service program, lack of multidisciplinary approach, lack of positive attitudes, lack of education with pain assessment tools, language barriers and poor documentation of pain assessment and management ( $p < 0.05$ ).

**Conclusions:** The study revealed that ICU nurses had moderate knowledge and practices regarding pain management, with gaps in the use of standardised assessment tools and attitudes toward pain. It is recommended to implement regular in-service training on pain management techniques, address staffing shortages, enhance multidisciplinary collaboration, improve resource allocation, and promote a positive attitude through continuous education to improve pain management effectiveness in ICUs.

**Keywords:** *Intensive care unit, Nursing officers, Pain management, Perceived barriers*

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OP 10

## Psychological Distress among Patients with Peripheral Vascular Disease: A Cross-sectional Study in Sri Lanka

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**Background:** Peripheral Vascular Disease (PVD) is a chronic, progressive atherosclerotic condition characterized by partial or total occlusion of vessels, leading to significant morbidity and limb loss. Chronic pain is often a central feature of PVD, contributing to increased anxiety, depression and stress among affected individuals. However, psychological burden of these patients is poorly understood in the Sri Lankan context.

**Objective:** To assess the psychological burden of PVD in patients admitted to the vascular unit of the National Hospital of Sri Lanka (NHSL), Colombo

**Methods:** A descriptive cross-sectional study was conducted with 213 patients aged 45-75 years. Data were collected using an interviewer-administered questionnaire. Socio-demographic characteristics were gathered and pain severity was assessed using the Numerical Pain Scale. Participants' psychological distress was determined using the Depression, Anxiety and Stress Scale-21 (DASS-21) validated to Sri Lankan context. Data were analysed using descriptive statistics and Spearman's correlation coefficient test with SPSS version 21.0.

**Results:** A total of 196 patients participated in the study, yielding a response rate of 92.0% (196/213). Mean±SD of the age was 54.18±8.1. Males constituted 65.8% of the sample. The majority (87.2%) reported severe pain while, 11.2% experienced moderate pain. The vast majority of patients had moderate depression (95.9%) and moderate anxiety (94.9%). Of the sample, 8.7% reported no stress, 75.0% experienced mild stress, and 16.3% reported moderate stress. Weak positive significant correlations were found between depression and stress ( $r=0.186$ ,  $p=0.009$ ), anxiety and stress ( $r=0.145$ ,  $p=0.042$ ), and depression and anxiety ( $r=0.197$ ,  $p=0.006$ ). However, no significant correlations were found in depression, anxiety, and stress with pain.

**Conclusions:** Most of the patients with PVD experience high pain intensity alongside moderate levels of depression and anxiety. There are weak but statistically significant positive correlations among depression, anxiety, and stress. This study highlights the need for implementing effective strategies for managing pain, addressing depression and anxiety, and improving coping with stress. By integrating pain management and mental health support, healthcare providers may improve patient outcomes and help reduce the burden of PVD.

**Keywords:** *Anxiety, Depression, Pain, Peripheral vascular disease, Stress*

OP 12

## Technology Readiness and Its Associated Factors among Nursing Officers for the Implementation of Electronic Health Record System at a Selected Hospital in Sri Lanka

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**Background:** Technology readiness is a well-established construct that refers to individuals' ability to accept and adopt new technology. In Sri Lanka, healthcare digitalization began in the early 2010s, with growing efforts such as electronic medical records in tertiary institutions. However, challenges persist in the readiness of nurses to integrate technology into practice highlighting importance of assessing technology readiness among nursing professionals to ensure the successful implementation and sustainability of health IT solutions in Sri Lanka.

**Objectives:** To assess the technology readiness and its associated factors among nursing officers for implementation of electronic health records (EHR) system at Teaching Hospital Karapitiya (THK) using technology readiness index (TRI)

**Methods:** A quantitative cross-sectional study was conducted among 325 nursing officers at THK, selected via simple random sampling. Data were collected using the validated TRI, covering demographics, EHR knowledge, and four dimensions: optimism, innovativeness, discomfort, and insecurity, and analysed using SPSS version 21.0.

**Results:** Of the sample majority were females (94.2%), aged 31-40 years (39.7%), and married (88.3%). Educational levels included diplomas (68.3%), degrees (30.2%), and postgraduates (1.5%), while 33.8% lacked formal IT education. TRI showed a moderate level of readiness, with a mean±SD score of 111.28±10.87 (range: 85-153), on a scale where higher values indicate greater readiness. Among TRI subscales; Optimism had the highest mean±SD score (37.09± 6.21), followed by Innovativeness (27.44±4.23). Negative dimensions Discomfort and Insecurity had mean±SD scores of 30.29±5.30 and 18.96 ± 4.13, respectively. Chi-square analysis indicated a significant association between TRI and age ( $p=0.020$ ), gender ( $p=0.024$ ), highest education ( $p=0.024$ ), and IT education ( $p=0.024$ ).

**Conclusions:** The study revealed a moderate level of technology readiness among nurses, with positive attitudes towards technology. However, the relatively elevated scores for Discomfort and Insecurity suggest the presence of psychological barriers to technology adoption, which may hinder the successful implementation of digital health technologies in clinical settings.

**Keywords:** Digital health technologies, Nurses, Technology readiness index

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OP 14

## Evaluation of Self-reported Job Satisfaction and Associated Factors among Nursing Officers, National Hospital Kandy, Sri Lanka

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**Background:** Job satisfaction plays a vital role in the wellbeing of nursing professionals and the quality of health care services they provide. Nurses face various challenges, including heavy workloads, salary concerns, and inadequate workplace conditions. These challenges have negatively impacted job satisfaction and contributed to high turnover rates among them.

**Objectives:** To evaluate self-reported job satisfaction levels and associated factors among the nursing officers at National Hospital Kandy (NHK), Sri Lanka

**Methods:** A descriptive cross-sectional study was conducted using 423 randomly selected nursing officers at the NHK. A validated 5-point, self-administered Likert scale varying from 1 to 5, with 28 items, was used for data collection (Cronbach's alpha value - 0.91). Data analysis was carried out using SPSS version 25.0 by applying descriptive statistical techniques and Chi-square tests. The study was conducted from June to August 2024.

**Results:** Of the sample the majority (79.9%) was females, and 55.4% were within the 31-40- year age group. Most participants were married (82.5%), held Grade II positions (48.3%), and had 6 - 10 years of work experience (42.8%). The overall job satisfaction among the nursing officers had a moderately high mean±SD score of 3.35±1.267. Statistically significant associations with self-reported overall job satisfaction were found for age category ( $p=0.032$ ), workstation support ( $p=0.01$ ), stress ( $p=0.04$ ), work-life balance ( $p=0.04$ ), and the distance from home ( $p=0.02$ ). However, gender, marital status, work experience, grade, and education level were not significantly associated with job satisfaction.

**Conclusions:** Nursing officers at NHK reported a moderately high level of job satisfaction. Key influencing factors include age, workstation support, stress levels, work-life balance and commuting distance. These findings highlight areas for administrative intervention to improve retention and workplace satisfaction.

**Keywords:** Job satisfaction, National hospital Kandy, Nursing officers

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OP 15

## **Knowledge, Attitudes and Perceived Barriers Regarding First Aid and Associated Factors among Patients Attending Base Hospital, Wathupitiwala, Sri Lanka**

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**Introduction:** First aid emphasises basic emergency care skills aimed at providing immediate assistance before professional medical help arrives and more often prior first aid leads to better clinical outcomes. Therefore, evaluating general populations' knowledge and attitudes aids in identifying educational needs and improving early interventions.

**Objective:** To assess knowledge, attitudes and perceived barriers regarding first aid and associated factors among patients attending Base Hospital, Wathupitiwala, Sri Lanka

**Methods:** A descriptive cross-sectional study was conducted among 422 patients attending Base Hospital, Wathupitiwala. A self-administered questionnaire developed based on previous literature was used to collect data. Data were analysed using SPSS version 25.0. Descriptive statistics and Chi-square tests were performed.

**Results:** Of the participants 51.4% (n=217) were females, 36.7% (n=155) were aged 20-30 years and 46% (n=194) were educated up to Advanced Level. Among the participants, 96.9% (n=409) did not have formal first aid training. Only 17% (n=72) demonstrated good level of knowledge regarding first aid with a mean±SD score of 45±24.3. The primary source of first aid knowledge was media (43.1%, n=182). Most participants (70.9%, n=299) had a positive attitude with a mean±SD score of 68.6±8.67. There were significant associations found between knowledge with age ( $p<0.000$ ), gender ( $p=0.002$ ), and previous first aid training ( $p=0.009$ ). Fear (80.6%, n=340), lack of knowledge (78.2%, n=330), and lack of equipment (69.2%, n=292) were found as the key barriers to perform first aid.

**Conclusion:** The findings highlight a significant gap in first aid knowledge among patients, despite their positive attitudes and good practices. The lack of formal training and key barriers such as fear and inadequate resources emphasize the urgent need for structured first aid education programs to improve first aid competency in the community and patient safety.

**Keywords:** *Attitudes, First aid, Knowledge, Perceived barriers*

OP 16

**Association of Family Income with the Clinical Profile and Health Outcomes of Neonates Admitted to the Neonatal Intensive Care Units in Galle, Sri Lanka**

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**Background:** Socio-economic factors, especially family income significantly impacts on neonatal health outcomes worldwide. Low-income families face barriers to receive quality neonatal care, leading to disparities in their health outcomes. In Sri Lanka, relationship between family income and neonatal care or health outcomes remains inadequately studied, highlighting the need for more focused studies in this area.

**Objective:** To determine the association of family income with the clinical profile and health outcomes of neonates admitted to the Neonatal Intensive Care Unit (NICU)s of selected hospitals in Galle, Sri Lanka

**Methods:** A cross-sectional study was conducted among conveniently selected 104 neonates admitted to selected NICUs in Galle, using a data collection guide. Data on family income (low, middle, high), clinical profile (gestational age, mode of delivery, intrauterine growth restriction, NICU stay, antibiotic usage), and health outcomes (feeding status, developmental milestones) were collected through hospital records. Descriptive statistics and Chi-square test were used for data analysis.

**Results:** The majority were preterm (67.3%), with a mean $\pm$ SD gestational age of 34 $\pm$ 3.7 weeks, and 75% were delivered via cesarean section. Among the neonates, 41.3% belonged to low, 48.1% to middle and 10.6% to high levels of family income. The majority of neonates (51.9%) had a NICU stay of less than seven days and 90.4% received antibiotics. At discharge, most neonates were breastfed (97.1%), sucked orally (63.5%) and most achieved development milestones: cognitive (92.3%), motor (95.2%), psychosocial (94.2%), and communication (91.4%). No significant associations were found between family income, and gestational age ( $p=0.621$ ), mode of delivery ( $p=0.298$ ), intrauterine growth restriction ( $p=0.392$ ), NICU stay ( $p=0.806$ ), antibiotic usage ( $p=0.829$ ), feeding type ( $p=0.607$ ), developmental milestones: cognitive ( $p=0.153$ ), motor ( $p=0.524$ ), psychosocial ( $p=0.846$ ), communication ( $p=0.465$ ) at discharge.

**Conclusion:** There is no significant association between family income and clinical profile or health outcomes of neonates. The findings indicate that neonatal critical healthcare in the studied NICUs in Sri Lanka is equitably accessible, irrespective of family income.

**Keywords:** *Clinical profile, Family income, Health outcomes, Neonates*



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OP 17

**Functional Capacity and Lower Limb Muscle Strength Impairments  
Distinguish Fallers from Non-fallers in Older Adults with Chronic  
Obstructive Pulmonary Diseases Attending National Hospital for  
Respiratory Diseases and Central Chest Clinic Colombo**

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**Background:** Older adults with chronic obstructive pulmonary disease (COPD) exhibit reduced lower limb muscle strength and reduced functional capacity compared to their healthy counterparts. There is limited evidence in Sri Lanka on whether functional capacity and lower limb strength can distinguish fallers from non-fallers and identifying these links is important to make targeted rehabilitation and fall prevention interventions.

**Objective:** To identify whether impairments in functional capacity and lower limb muscle strength can distinguish fallers from non-fallers among a selected group of patients with COPD

**Methods:** A cross-sectional study was conducted at Central Chest Clinic Colombo, and National Hospital for Respiratory Diseases Welisara from August to September 2024, involving COPD patients aged 60 and older according to the consecutive sampling technique. Lower limb muscle strength was assessed using the Five times Sit-To-Stand test (5STS), while functional capacity was evaluated with a Six-Minute Walk Test (6MWT).

**Results:** A total of 229 individuals with COPD (177 males) with a mean $\pm$ SD age of 70 $\pm$ 6.8 years were recruited. Of them, 24.9% reported at least one fall in the previous 12 months and 69.9% were ex-smokers. Mean $\pm$ SD 5STS and 6MWD scores were 20.8 $\pm$ 6.4 seconds and 353.9 $\pm$ 92.2 meters, respectively. Females took significantly longer time to complete 5STS test (21.6 $\pm$ 5.6 seconds) compared to males (20.6 $\pm$ 5.6 seconds) ( $p=0.001$ ), whereas males demonstrated a higher mean $\pm$ SD 6MWD (369.8 $\pm$ 96.7 meters) than females (343.8 $\pm$ 72.3 meters) ( $p=0.004$ ). Fallers (24.8 $\pm$ 7.6 seconds) required significantly more time to complete the 5STS test than non-fallers (19.5 $\pm$ 5.4 seconds) ( $p=0.001$ ), whereas non-fallers (388.0 $\pm$ 85.0 meters) covered a significantly longer distance during the 6-minute walk test compared to fallers (291.0 $\pm$ 73.2 meters) ( $p=0.001$ ).

**Conclusions:** In the selected group of patients with COPD, there were significant impairments identified in muscle strength and functional capacity among fallers compared to non-fallers.

**Keywords:** COPD, Functional capacity, Muscle weakness, Older adults

OP 18

**The Association between Sleep Quality and Functional Capacity of the Patients with Chronic Obstructive Pulmonary Disease in the National Hospital for Respiratory Diseases, Welisara and Central Chest Clinic, Medical Research Institute, Sri Lanka**

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**Background:** Sleep disturbances are common in patients with Chronic Obstructive Pulmonary Disease (COPD) and may impact functional exercise capacity. However, the relationship between sleep quality and functional exercise capacity of the patients with COPD in Sri Lanka remains underexplored.

**Objective:** To evaluate the relationship between sleep quality and functional exercise capacity in clinically stable COPD patients

**Methods:** A descriptive cross-sectional study was conducted at the National Hospital for Respiratory Diseases, Welisara, and Central Chest Clinic, Medical Research Institute, Sri Lanka, including a total of 160 clinically stable COPD patients aged 30 to 79 years. Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI), categorizing participants into good sleep ( $PSQI \leq 5$ ), poor sleep quality ( $5 < PSQI \leq 11$ ), and severe sleep disturbances ( $11 < PSQI \leq 21$ ). Functional exercise capacity was measured using the 6-Minute Walk Distance (6MWD) and dyspnea levels were assessed using the Modified Medical Research Council Dyspnea scale. COPD severity was classified according to the Global Initiative for Chronic Obstructive Lung Disease (GOLD) guidelines.

**Results:** This study included 116 male and 44 female COPD patients with a mean $\pm$ SD age of  $66.43 \pm 7.7$  years. The majority of patients experienced poor (48.1%) or severe (46.3%) sleep disturbances, with only 5.6% reporting good sleep quality. The 6MWD was significantly differed across sleep quality groups ( $p < 0.001$ ), with poorer sleep quality associated with reduced functional capacity. A strong negative correlation was observed between PSQI global score and 6MWD ( $p < 0.001$ ), indicating that worse sleep quality was linked to lower functional exercise capacity.

**Conclusion:** The findings highlight a significant association between poor sleep quality and reduced functional exercise capacity observed across older adult COPD patients. The need for targeted interventions to improve sleep and physical function in COPD management is highly recommended.

**Keywords:** COPD, Functional exercise capacity, PSQI, Sleep quality, 6MWD

OP 19

## Patient Knowledge and Adherence to Practices Related to Continuous Ambulatory Peritoneal Dialysis: A Study at a Tertiary Care Hospital in Sri Lanka

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**Background:** Continuous ambulatory peritoneal dialysis (CAPD) is a potentially cost-effective renal replacement therapy underutilised in developing countries. Undesirable outcomes in CAPD patients are often linked to poor knowledge and adherence to treatment practices.

**Objectives:** To explore patients' knowledge, adherence to treatment practices and identify factors associated with outcomes in CAPD patients at a tertiary care institution in Kandy district.

**Methods:** A cross-sectional study with a concurrent observational component was conducted among 25 consenting adult patients undergoing CAPD for end-stage renal disease at Teaching Hospital Peradeniya. A validated interviewer-administered questionnaire evaluated knowledge using 60 items (total score: 60 points) covering diet, exchange procedure, peritonitis, exit-site infections, and general. Adherence to practices was directly observed during a CAPD session using a 60-item checklist focused on exchange procedure and exit-site care. Medical record review identified outcomes (peritonitis, exit-site infections, and unscheduled hospitalization). Associations between socio-demographics and outcomes with knowledge and practice scores were analyzed using Chi-squared test and Mann-Whitney U-test. Association between knowledge and practice was assessed using Spearman correlation. Significance was assessed at alpha 0.05.

**Results:** Participants were on average 55±15.2 years, undergoing CAPD for 1.29±0.78 years and 11 were females. Mean±SD knowledge and practice scores achieved were 22.4±5.81 and 52.05±5.40, respectively. Peritonitis, exit-site infections, unplanned hospitalizations, and any adverse outcome occurred at rates of 0.25, 0.31, 0.28, and 0.84 episodes per patient-year, respectively. Outcomes were independent of age, sex, educational level, family income, requirement for assistance, knowledge score, and practice score. The practice score was positively and significantly correlated with knowledge score ( $R=0.476$ ,  $p=0.025$ ). Neither score was associated with duration of treatment.

**Conclusions:** Despite satisfactory CAPD practices, knowledge gaps exist, highlighting the need for repeated reinforcement. Satisfactory practices likely contributed to low levels of unfavorable outcomes. Bridging knowledge gaps may improve outcomes further.

**Keywords:** *Adherence, Continuous ambulatory peritoneal dialysis, Knowledge, Practices, Tertiary care hospital*

## **Theme: Medical Laboratory Science**

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OP 20

## Phylogenetic Analysis of Relaxin-3 Protein Amino Acid Sequence across Vertebrate Species

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**Background:** Relaxin-3 (RLN3) is a highly conserved protein hormone found in species such as flies, fish, rodents, and humans. Initially discovered as a neuropeptide, it modulates arousal, stress response, feeding, metabolism, and memory. It also mediates peripheral actions during pregnancy and has been found to relax the pelvic ligaments in guinea pigs. Due to its crucial role in human neuronal process modulation, dysregulation of Relaxin-3 is often associated with mental illnesses, leading to the emergence of Relaxin-3-based drugs as potential therapeutic agents.

**Objectives:** To re-examine the evolutionary relationship between vertebrates of different genera to decipher a conserved domain evolutionary relationship with the reference species *Homo sapiens*, using several bioinformatics tools

**Methods:** This study commenced with a comprehensive literature review, followed by selecting 28 vertebrate species known to possess the Relaxin-3 protein. The amino acid sequences were retrieved using FASTA and subsequently analysed through BLAST for sequence comparison. Multiple sequence alignment was conducted using Clustal Omega, followed by constructing a phylogenetic tree and a conserved domain search to elucidate evolutionary relationships and functional characteristics.

**Results:** Phylogenetic tree suggested the close relation of *Homo sapiens* and *Ptilocolobus tephrosceles* (primate), Conserved domain sequences confirmed the evolutionary relationship of Relaxin-3 protein in *Ptilocolobus tephrosceles* to *Homo sapiens* with 92.957% similarity followed by *Pogona vitticeps* (reptile) with 22.535%. *Zonotrichia albicollis* (Aves) shows more similarity to *Homo sapiens*, than *Rhinocodon typus* (Oreotolobiformes) and *Maylandia zebra* (Pisces: perciformes) with 20.512% in conserved domain sequence analysis. These findings indicate that Relaxin-3 protein is highly conserved across species, and the protein's evolutionary divergence reflects the varying degrees of neural complexity among vertebrates.

**Conclusions:** Cladistics confirmed Relaxin-3's monophyletic conservation in primates (92.96% similarity), with divergent but functional retention in reptiles (22.54%) and birds (20.51%). Phylogeny mirrors vertebrate neural complexity, though deeper divergences require further resolution.

**Keywords:** Bioinformatics, Evolution, Phylogenetics, Relaxin 3, Therapeutic agent

## OP 21

### Expression of Biofilm Forming Virulence Genes in *Proteus mirabilis*: Insights from an *in-vitro* Bladder Model

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**Background:** *Proteus mirabilis* forms crystalline biofilms that lead to catheter encrustation and blockage, contributing to the chronicity and recurrence of catheter-associated urinary tract infections (CAUTIs), especially in long-term catheterized patients. Understanding the expression of biofilm-forming virulence genes of *P. mirabilis* is critical for developing strategies to prevent CAUTIs.

**Objective:** To investigate the differential expression of biofilm-associated virulence genes (*ureC*, *rsbA*, *mrpA*, and *speA*) in *P. mirabilis* before and after biofilm formation using a validated *in-vitro* bladder model

**Methods:** To establish an *in-vitro* bladder model, sterile double-walled glass vessels, aspirator bottle, catheters, and drainage bags were utilised, while a water bath and peristaltic pump were also incorporated into the setup. Tube ends were sealed in foil to further maintain sterility. The peristaltic pump maintained a steady urine flow, and a water bath with circulating water (37 °C) around the double-walled vessel regulated body temperature. The model was inoculated with a *Proteus mirabilis* quality control strain and clinical isolates (n=6), and functioned until the catheter became blocked. Expression levels of virulence genes were assessed before and after biofilm formation using quantitative real-time PCR (qPCR).

**Results:** All four virulence genes showed a notable increase in expression after biofilm formation. Before biofilm formation, the relative expression levels of *ureC*, *mrpA*, *rsbA*, and *speA* ranged from 0.01-3.53, 0.02-2.26, 0.01-2.77, and 0.02-2.82, respectively. However, these values increased after biofilm formation, with expressions ranging from 0.57-34.77, 1.13-65.69, 0.13-53.51, and 0.20-120.25 for *ureC*, *mrpA*, *rsbA* and *speA*, respectively. The fold change in gene expression further confirmed the upregulation, with *ureC* and *rsbA* showing the highest (1574-fold) and least (0.05-fold) increase, respectively. Expression of *ureC* and *mrpA* genes showed a significant increase following biofilm formation (Wilcoxon signed-rank test;  $p=0.036$ ).

**Conclusions:** The marked upregulation of *ureC*, *rsbA*, *mrpA*, and *speA* genes after biofilm formation highlights their key role in the persistence and development of *P. mirabilis* biofilms in catheterized environments.

**Keywords:** Biofilms, Bladder model, Expression, *Proteus mirabilis*, Virulence genes

**Acknowledgment:** University Research Grant, University of Sri Jayewardenepura (ASP/01/RE/AHS/2022/90)

OP 22

## Persistence of Antibiotic-resistant Genes in Chlorinated Drinking Water: Evidence from Mahaweli River Water Treatment Plants, Sri Lanka

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**Background:** The presence of antibiotic-resistance genes (ARGs) has been reported in river water sources. Water treatment plants (WTPs) primarily focus on removing coliforms before distributing chlorinated water for human consumption. However, data regarding the presence of ARGs in chlorinated water in Sri Lanka are scarce.

**Objective:** To investigate the presence of ARGs in chlorinated drinking water treated by WTPs located along the Mahaweli river

**Methods:** Chlorinated water samples (each 100 mL) were collected from 15 WTPs situated along the Mahaweli river between the Kotmale and Victoria reservoirs. The samples were filtered using 0.22 µm membrane filters to separate bacteria. The retained bacteria were cultured on nutrient agar plates. The resulting colonies were pooled and underwent DNA extraction. Conventional PCR was employed with gene-specific primers targeting resistance to five major classes of antibiotics: β-lactams (*bla-TEM*), aminoglycosides (*aadA1*), sulfonamides (*sul1*, *sul2*), tetracyclines (*tetM*), quinolones (*qnrS*) and trimethoprim (*dfrA14*). PCR amplified products were analyzed for the presence of the expected genes via agarose gel electrophoresis.

**Results:** The most frequently detected gene was *bla-TEM* (45.2%), followed by *aadA1* (38.1%). *Sul-1* and *qnrS* were found in 28.6% of the samples. *Sul-2* was present in 14.3% of the samples, while *tet-M* was detected in 23.8%. The gene *dfrA14* was found in 16.7% of the samples. The tested ARGs were highly abundant at the WTPs located near heavily polluted catchments, specifically Paradeka (62%), Balagolla (57%), Ulapane (48%), and Greater Kandy (Katugastota) (48%). Except for the Thalawakelle WTP, where less contaminated raw water from a forested catchment was used, all other WTPs had at least one tested ARG in their chlorinated water.

**Conclusion:** Our results revealed the presence of various ARGs in chlorinated drinking water from WTPs along the Mahaweli river, showing higher abundances associated with the elevated pollution status of the river catchment.

**Keywords:** Antibiotic-resistant genes, Chlorination, Drinking water treatment plants, Mahaweli river

**Acknowledgment:** Financial assistance from the University Research Council, University of Peradeniya (Grant No.280:2022)



OP 23

## Seroreactivity to *Leptospira* Serovars among Healthy Pregnant Women in Sri Lanka: Implications for MAT Panel Optimization

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**Background:** The Microscopic Agglutination Test (MAT) is the standard for leptospirosis serodiagnosis and seroepidemiology. Most panels are designed for clinical use, yet their performance in healthy populations remains underexplored. Understanding local baseline serogroup reactivity is critical for adapting MAT panels for population-based surveillance.

**Objective:** To identify the most frequently reactive *Leptospira* serovars using an 11-serovar MAT panel optimized for clinical diagnosis and assess its suitability for seroprevalence studies in a healthy population

**Methods:** Serum from 1,344 healthy pregnant women in the Rajarata Pregnancy Cohort (Anuradhapura, Sri Lanka) was tested using a published, locally optimized MAT panel comprising 11 serovars from three pathogenic and one saprophytic species, representing 10 serogroups (Australis, Canicola, Icterohaemorrhagiae, Mini, Pyrogenes, Bataviae, Sejroe, Autumnalis, Javanica, and Semaranga). Seroreactivity, defined as  $\geq 50\%$  agglutination reduction compared to controls, was assessed to determine frequency and cross-reactivity patterns.

**Results:** Seroreactivity, based on the highest observed MAT titer per individual (ranging from 1:50 to 1:800), was detected in 119 individuals (8.9%). Of these, 105 (88.2%) showed reactivity to a single serovar, and 14 (11.8%) exhibited cross-reactivity. *L. interrogans* serovar Bratislava (strain Jez-Bratislava) was predominant (106, 89.1%), followed by Icterohaemorrhagiae (11, 9.2%), Pyrogenes (5, 4.2%), Patoc (5, 4.2%), Weerasinghe (3, 2.5%), Georgia (2, 1.7%), Mankaraso (1, 0.8%), and Bataviae (1, 0.8%). No reactivity was observed to serovars Canicola, Ceylonica, or Wolffii. Serovar Bratislava cross-reacted with all reactive serovars except Mankaraso.

**Conclusions:** In this healthy low risk population, a subset of serovars accounted for the majority of MAT reactivity, suggesting that a smaller, regionally tailored MAT panel could potentially capture most seroreactivity in similar populations. However, large scale community studies are needed to select the optimal panel. The dominance of reactivity to serovar Bratislava also commonly detected in clinical cases suggests potential cross reactivity or shared epitopes with circulating strains.

**Keywords:** *Leptospira*, MAT panel, Microscopic Agglutination Test, Seroprevalence

**Acknowledgment:** Financial assistance by Open Philanthropy for the Public Health Research Laboratory, Faculty of Medicine, Rajarata University of Sri Lanka, via the International Vaccine Institute, Korea, under Grant Number 2023-329784 (5384/GB-1595378).



OP 24

## Seroprevalence of Leptospirosis in a Selected Healthy Population: Determining a Cutoff Value for Microscopic Agglutination Test Titre

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**Background:** The Microscopic Agglutination Test (MAT) remains the serological reference test for leptospirosis serodiagnosis; however, interpretation of diagnostic titer thresholds varies widely across clinical settings. Establishing population-based upper reference limits for MAT titers is essential to distinguish background seroreactivity from clinically significant responses.

**Objectives:** To determine the cutoff value for MAT titers in a selected healthy population and establish upper reference limits to support clinical interpretation of leptospirosis serology

**Methods:** MAT results from 1,344 healthy pregnant women enrolled in the Rajarata Pregnancy Cohort in Sri Lanka were analysed. Each serum sample was tested against a locally optimized MAT panel comprising 11 serovars, representing 10 serogroups (Australis, Canicola, Icterohaemorrhagiae, Mini, Pyrogenes, Bataviae, Sejroe, Autumnalis, Javanica, and Semaranga). For each participant, the highest MAT titer among these pathogenic serovars was used. The 95<sup>th</sup> and 97.5<sup>th</sup> percentiles of this distribution were calculated to define the upper limit of expected background reactivity in a healthy population.

**Results:** Of the 1,344 individuals tested, 119 (8.9%) demonstrated reactivity to at least one pathogenic serovar. The most reactive serovar was *Leptospira interrogans* serovar Bratislava. MAT titers ranged from 1:50 to 1:800. Specifically, 45 individuals (3.3%) had a maximum titer of 1:50, 41 (3.1%) had 1:100, 30 (2.2%) had 1:200, 2 individuals (0.14%) had 1:400 and 1:800 (0.07% each). Bootstrap analysis of the empirical distribution of MAT titers found both the 95<sup>th</sup> and 97.5<sup>th</sup> percentiles among seropositive individuals at 1/200, with a 95% CI of 1/200 to 1/400. Titers higher than 1/200 are therefore rare in this healthy population. The convergence of these empirical percentile thresholds at 1/200 supports its validity as the upper reference limit.

**Conclusions:** A MAT titer of 1:200 defines the upper limit of background seroreactivity in this selected population of healthy pregnant women. This threshold may serve as a useful reference for interpreting leptospirosis serology in similar groups. However, its generalization to other populations should be approached with caution.

**Keywords:** Cutoff value, Leptospirosis, Microscopic Agglutination Test, Pregnant women, Seroprevalence

**Acknowledgment:** Financial assistance by Open Philanthropy through the International Vaccine Institute (IVI) under grant number 2023-329784 (5384) GB - 1595378.

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OP 25

## Computational Design of a CRISPR-Cas13-Driven Genetic Logic Gate Biosensor for Early Detection of Breast Cancer Biomarkers

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**Background:** Breast cancer remains one of the leading causes of cancer-related mortality among women worldwide. Early detection using specific biomarkers and synthetic biology tools can significantly enhance diagnostic precision and therapeutic outcomes.

**Objective:** To develop a computationally validated CRISPR-Cas13-based biosensing system integrated with synthetic genetic logic gates for early and accurate detection of breast cancer biomarkers

**Methods:** A multi-disciplinary approach combining bioinformatics, molecular biology, and computational modeling was employed. Key biomarkers; Human Epidermal Growth Factor Receptor 2 (HER2), Mucin 1 (MUC1), and Epidermal Growth Factor Receptor (EGFR) were identified through literature mining and database analysis (e.g., NCBI, TCGA). Guide RNAs (gRNAs) were designed to specifically target mRNA sequences of these markers using CRISPR-Cas13 technology. Gene circuits were engineered incorporating logic gates (AND, OR, and NOT), promoters, terminators, and fluorescent reporters (e.g., GFP, RFP) to produce a signal only when the correct biomarker combinations were detected. The circuits were computationally modeled and simulated using COPASI for dynamic behavior, logic validation, and parameter sensitivity. *In silico* simulations guided design refinement prior to *in-vitro* implementation. Genetic constructs were planned for integration into a microfluidic device using electrochemical biosensing for output signal detection.

**Results:** COPASI-based simulations validated the designed gene circuits, showing correct logic gate operations and stable output signal generation in response to target biomarker inputs. The AND gate circuit showed high specificity for concurrent HER2 and MUC1 detection, while OR and NOT gates enabled flexible detection patterns.

**Conclusions:** The study presents a novel CRISPR-Cas13-based genetic circuit system, computationally designed and validated for breast cancer detection. Integration with genetic logic gates and biosensor interfaces sets the foundation for a precise, programmable diagnostic device.

**Keywords:** Bioinformatics, Breast cancer, CRISPR-Cas13, Genetic circuits, Logic gates

OP 26

## Factors Associated with Male Sub-fertility among Couples Attending Subfertility Clinics in a Tertiary Care Center in Southern Sri Lanka

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**Background:** Despite recent experiments and interventions in the field of reproductive health, male subfertility has emerged as a serious global problem. Studies focusing on the causes of male sub-fertility in Sri Lanka are extremely scarce.

**Objectives:** To investigate the relationships between various etiologies and male sub-fertility in a tertiary care centre in Southern Sri Lanka

**Methods:** A cross-sectional study was conducted among subfertile males who attended the sub-fertility clinics in Teaching Hospital Mahamodara, Sri Lanka, from the 01<sup>st</sup> of July to the 31<sup>st</sup> of December 2023. A convenience sampling technique was used to enrol 50 subfertile men in the study. A self-developed, validated questionnaire was used to collect data. Semen samples were collected from each participant after 3-5 days of abstinence, and basic semen analysis was performed according to the WHO laboratory manual for the examination and processing of human semen, 6th edition (2021). In addition, 5 mL of blood was collected from each participant, and fasting blood sugar (FBS), lipid profile, and HbA1c were performed. A bioelectrical impedance analysis (BIA) scan was performed on each participant for the measurement of body fat. Data were analysed using SPSS version 21.0.

**Results:** The age distribution of the study participants was ranged from 26 to 45 years. Of the total, 56.0% (n=28) were presented with a BMI above the normal range. BIA analysis revealed very high body fat levels in 48.0% (n=24) study participants, while 28.0% (n=14) were presented with high visceral fat levels. Among the study participants, 20.0% (n=10) were presented with high FBS levels and high HbA1C results, while 66.0% (n=33) were presented with high total cholesterol. Moreover, 44.0% (n=22) were reported using mobile phones for more than four hours per day, and 10% (n=5) were reported using laptops for more than two hours per day. However, a statistically significant correlation could not be observed between sperm parameters (motility, morbidity, and viability) and FBS, HbA1c, and lipid parameters.

**Conclusions:** Any correlation between sperm parameters and FBS, HbA1c, and lipid parameters of the study participants could not be observed using Pearson correlation.

**Keywords:** *Body Mass Index, Fasting Blood Sugar, HbA1c, Lipid profile, Sub-fertility*

**Acknowledgment:** Faculty Research Grant, Faculty of Allied Health Sciences, University of Ruhuna, Sri Lanka

## **Theme: Public Health**

OP 27

## Assessment of *Escherichia coli* Contamination in Tap Water at Selected Railway Stations in Colombo District, Sri Lanka

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**Background:** In Sri Lanka, public water sources are widely used for drinking and washing purposes, yet concerns about their safety persist. This research highlights the importance of identification of *Escherichia coli* (*E. coli*) contamination in public water sources that will aid in the control of health risks. Regular monitoring of water sources for *E. coli* is crucial to ensure drinking water safety, where *E. coli* is one of the main pathogens causing a spectrum of diseases. This study focuses on assessing *E. coli* contamination of public water sources at selected railway stations in the Colombo district, Sri Lanka.

**Objective:** To determine the presence of *E. coli* in tap water available at railway stations in the Colombo district, Sri Lanka

**Methods:** This cross-sectional study investigated the presence of *E. coli* in tap water from 30 railway stations. Water samples were collected in sterile amber-colour glass bottles and transported in ice boxes following established protocols. The membrane filtration method was performed under vacuum pressure utilizing a 100 mL sample volume. Then, membrane filters were placed on Eosin Methylene Blue (EMB) agar and incubated at 35 °C for 24 hours. *E. coli* was identified by their characteristic shiny, metallic, greenish-coloured colonies.

**Results:** The findings revealed that 36.66% of the samples contained bacteria. Among the bacteria positive samples, one sample (3.33%) was found to be positive for *E. coli*, with a colony count of 7 CFU/100 mL. According to the Sri Lanka Standards Institute (SLSI) guideline for drinking water, the acceptable limit for *E. coli* is 0 CFU/100 mL. The remaining 33.33% of the positive samples contained other bacterial species. Positive bacterial samples included 3.33% Gram-positive cocci, 10% Gram-negative cocci, and 23.33% Gram-negative bacilli.

**Conclusions:** The findings indicate bacterial presence in a considerable number of water samples. *E. coli* contamination was found in one of the tap water samples taken from a railway station. The presence of *E. coli* indicates faecal contamination. Although with one sample contamination, this may indicate a potential health risk to the public. Improved monitoring mechanisms, regular testing, public awareness and sanitation measures are essential to ensure safe drinking water and prevent the spread of waterborne diseases through public water resources.

**Keywords:** *Escherichia coli*, Public water sources, Waterborne diseases, Water contamination

**Acknowledgment:** KIU, Sri Lanka for funding

OP 28

## Cues to Action and Self Efficacy in Dengue Prevention Practices among Adults in Galle Medical Officer of Health Area

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**Background:** Dengue is a major public health concern, particularly in the Galle Medical Officer of Health (MOH) region. Despite the continuous dengue prevention programs conducted by the MOH, still there are a high number of cases detected in the region. Assessing the cues to take action and self-efficacy among the community is important to extend the prevention practices to new direction.

**Objective:** To assess the cues to action and self-efficacy in dengue prevention practices among adults in Galle MOH area

**Methods:** A descriptive cross-sectional study was conducted among 422 adults, residing in the Galle MOH area and a convenient sampling method was used. The survey was carried out in high dengue prevalence areas in Galle MOH area. Data were collected through a pre-tested, self-administered questionnaire covering cues to action and self-efficacy using a Likert scale with scores ranging from -2(strongly disagree) to +2(strongly agree) and Chi-square test was used to analyse associations.

**Results:** The sample comprised predominantly of females (75.4%), with a majority (56.6%) identifying as Muslims. Designated living areas as a dengue hotspot (58.8%) and televised programming and news stories about dengue deaths (55.9%) were identified as key motivators. Higher engagement was shown (57.3%) when family members or neighbors were infected, with a significant association between neighbors' dengue history and cues to action. The mean±SD value for cues to action was 5.72±3.63. The mean±SD value for self-efficacy was 8.15±2.532, with most participants actively engaging in prevention despite work (64.9%) and childcare (64.5%) responsibilities. Even though government support was not adequate 62.8% agreed that they were still motivated to engage in dengue prevention. Neighbors' history of dengue infection was significantly correlated with self-efficacy ( $p=0.036$ ).

**Conclusion:** Findings indicated that the previous dengue infection history of individual and community, have strong influences on dengue prevention cues to action and self-efficacy. Despite limited government support, the majority of subjects were highly motivated and actively engaged in prevention activities, even with work and childcare responsibilities. These results highlight the importance of social influence and perceived capability in driving public health behavior.

**Keywords:** Cues to action, Dengue prevention, Galle MOH area, Self-efficacy

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OP 29

## **Knowledge and Preventive Practices on Major Cardiovascular Non-communicable Diseases and Identify Associated Factors among Young Adults in National Youth Council Center, Maharagama, Sri Lanka**

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**Background:** Deaths due to cardiovascular diseases is rising among adults below fifty years of age in Sri Lanka, highlighting the need for awareness on cardiovascular diseases for preventive and early identification purposes.

**Objective:** To assess the knowledge and preventive practices regarding major cardiovascular non-communicable diseases and identify associated factors among young adults in the National Youth Council Center, Maharagama, Sri Lanka

**Methods:** A descriptive cross-sectional study was conducted among 307 students selected using stratified random sampling technique to ensure fair representation of both full-time and part-time students. Data were gathered using a pre-tested, self-administered questionnaire. Data analysis was done using Shapiro -Wilk, Mann-Whitney and Kruskal - Wallis one - way ANOVA statistical tests.

**Results:** Most participants were female (52.8%) and belonged to the 18-20-year age group (67.1%). Among them, 48.5% demonstrated a moderate level of knowledge. The mean percentage for preventive practices was 44.21%, indicating a moderate level of engagement. Significant associations were found between knowledge and several sociodemographic factors, including gender ( $p=0.003$ ), the current course of study ( $p=0.000$ ), and sources of knowledge such as the internet ( $p=0.029$ ) and social media ( $p=0.000$ ). Additionally, preventive practices were significantly associated with nationality ( $p=0.022$ ), religion ( $p=0.030$ ), and permanent location ( $p=0.036$ ).

**Conclusion:** The majority of participants demonstrated a moderate level of knowledge and engagement in preventive practices. Association between level of knowledge and sociodemographic factors highlights the necessity for targeted educational campaigns to address specific knowledge gaps and improve preventive behaviors.

**Keywords:** *Cardiovascular non-communicable diseases, Preventive practices, Young adults*

OP 30

## **Dietary Practices and Their Determinants of Pregnant Mothers Attending Antenatal Clinics in Selected Medical Officer of Health Areas in Colombo District, Sri Lanka**

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**Background:** Proper maternal nutrition is vital for fetal development and maternal health. Dietary practices among pregnant women are influenced by personal, socioeconomic, and environmental factors. Despite established healthcare, nutritional disparities persist in Sri Lanka, necessitating targeted interventions to improve maternal nutrition and pregnancy outcomes.

**Objective:** To assess the dietary practices and their determinants of pregnant women attending antenatal clinics at Medical Officer of Health (MOH) areas in the Colombo district, Sri Lanka

**Methods:** A descriptive cross-sectional study was conducted in four purposively selected MOH areas in Colombo, Sri Lanka. A total of 422 participants were selected through a cluster sampling method. Data were gathered using a validated questionnaire with two sections, including sociodemographic data and a pre-validated Food Frequency Questionnaire (FFQ). Appropriate dietary practices were identified; if the women had at least four meals a day, high food variety score (FVS), high dietary diversity (DD), and high animal source consumption (ASF). Data were descriptively analysed for frequencies and percentages using SPSS version 26.0. Poisson regression was applied to identify determinants of dietary practices. Statistical significance was considered at  $p < 0.05$ .

**Results:** Of the total, 380 (90%) participants responded. The mean $\pm$ SD age was 30.72 $\pm$ 3.96 years, with the majority (98.2%) being married, and residing in urban areas (73.7%). Of them, 64.7% exhibited high DD. Additionally, 52.1% had a high FVS, and 64.7% demonstrated high ASF. Overall, 64.7% followed appropriate dietary practices. Higher educational attainment, formal employment, and residential areas were determinants of appropriate dietary practices, whereas younger age, lower education levels, and being a housewife were associated with inappropriate dietary practices ( $p < 0.05$ ).

**Conclusions:** This study highlights that predominantly pregnant mothers had appropriate dietary practices, but a considerable number were found to have poor practices. While age, occupation, higher education level, and residential areas influence their dietary practices, immediate interventions need to address the vulnerable groups.

**Keywords:** *Dietary diversity, Maternal nutrition, Nutritional disparities*



OP 31

## Cultural Adaptation and Psychometric Validation of the Sinhala Version of the Osteoporosis Knowledge Assessment Tool

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**Background:** Osteoporosis is a global health problem and it is a prevalent disease among postmenopausal women in Asian countries. It is considered as a silent disease as it does not give any clue until person suffer a fracture which is a major cause of long-term disability. Assessing osteoporosis-related knowledge is crucial for promoting prevention and management strategies. A validated tool for assessing knowledge on osteoporosis is therefore much needed. Osteoporosis Knowledge Assessment Tool (OKAT) is a reliable and standardised measure to assess individual knowledge of osteoporosis and it has been used across various countries, with no categorisation of any domains.

**Objectives:** To adapt the OKAT in Sinhala language and assess its psychometric properties among peri-menopausal and postmenopausal women

**Methods:** This validation study comprised of two phases; cultural adaptation and psychometric properties evaluation. Cultural adaptation includes forward translation, synthesizing a common version, backward translation, expert review and testing pre-final version. The final Sinhala version of OKAT was administered among 179 peri-menopausal and postmenopausal women selected using multi-stage random sampling from the Hikkaduwa Medical Officer of Health division. The tool was re-administered among the same group of women after two weeks of first administration. Content validity was evaluated using the expert review. Reliability was determined by measuring internal consistency (Cronbach's alpha) and test-retest reliability (interclass correlation coefficient, ICC). Construct validity was examined using exploratory factor analysis.

**Results:** The content validity index (CVI) was 0.97, indicating strong agreement among experts on the relevance and clarity of the questionnaire items. The OKAT demonstrated good internal consistency measures with Cronbach's alpha of 0.91 and high test-retest reliability measured with ICC of 0.91. Factor analysis using the Principle Component Analysis revealed four factor structure with eigen value >1, explaining 59.81% of variance with KMO value of 0.89 and Bartlett Test of Sphericity <0.001. The factor structure showed four main factors that can be explained as 'General Knowledge about Osteoporosis', 'Knowledge on Risk Factors', 'Knowledge on Preventive Measures' and 'Knowledge on Consequences and Management'.

**Conclusions:** The Sinhala version of OKAT demonstrated excellent validity and reliability in assessing osteoporosis related knowledge among peri-menopausal and postmenopausal women. Further, this is a psychometrically sound tool and its validity and reliability make it a valuable instrument for both research and educational interventions focusing osteoporosis awareness and prevention. Further studies are recommended to explore its applicability in diverse populations with confirmatory factor analysis.

**Keywords:** Knowledge assessment tool, Osteoporosis, Validation

OP 32

## Prevalence of Musculoskeletal Disorders and Associated Occupational Risk Factors among Chefs in Five-star Hotels in Colombo Municipal Council Area, Sri Lanka

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**Background:** Work-related musculoskeletal disorders (WRMSDs) are common in physically demanding jobs, including the culinary industry. In Sri Lanka, chefs play a vital role in the tourism sector, particularly in food tourism. However, the physical demands of their work increase the risk of developing WRMSDs.

**Objective:** To determine the prevalence of WRMSDs and associated occupational risk factors among chefs in five-star hotels in Colombo municipal council area, Sri Lanka

**Methods:** A descriptive, cross-sectional study was conducted using systematic random sampling. A total of 100 chefs from four five-star hotels registered with the Sri Lanka Tourism Development Authority were recruited. Data were collected using the Cornell Musculoskeletal Discomfort Questionnaire (CMDQ) to assess the frequency, severity, and work-related interference of musculoskeletal symptoms over the past work-week. Statistical analysis was performed using SPSS 25.0. Independent samples *t*-tests were used to analyse pain severity related to resting periods, repetitive movements, and double shifts.

**Results:** Among the 100 chefs, 94% reported musculoskeletal discomfort, most commonly in the neck (55%), right shoulder (54%), and lower back (47%). Lower back pain was significantly associated with age ( $r=0.310$ ,  $p=0.002$ ) and work experience ( $r=0.345$ ,  $p=0.001$ ). BMI was significantly correlated with forearm ( $p=0.022$ ) and hip ( $p=0.009$ ) discomfort. The left foot was most affected by inadequate rest ( $p=0.015$ ), and the lower back was most affected by both repetitive tasks ( $p=0.001$ ) and double shifts ( $p=0.010$ ).

**Conclusion:** WRMSDs are highly prevalent among chefs, with strong associations to age, BMI, work experience, and occupational factors. These findings emphasize the need to address work-related contributors to musculoskeletal symptoms in this population.

**Keywords:** Chefs, Musculoskeletal disorders, Occupational risk factors, Repetitive movements

## **Poster Presentations**

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## **Theme: Pharmacy and Pharmaceutical Sciences**

## Effectiveness of Patient Education and Monitoring Insulin Therapy Adherence and Glycaemic Control among Patients with Type 1 Diabetes Mellitus

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**Background:** Diabetes mellitus is a complex and prevalent chronic medical condition, that remains a major global health concern. Type 1 diabetes, also known as insulin-dependent diabetes, primarily affects young individuals, and is often diagnosed before the age of 40 years. This trend underscores the need for effective strategies to address the unique challenges faced by this demographic.

**Objective:** To examine the effectiveness of patient education and monitoring on insulin therapy adherence and glycaemic control in physically active patients under 40 years of age

**Method:** This prospective longitudinal study was conducted at the endocrine clinic of the District General Hospital in Polonnaruwa for three months. A random sampling technique was employed to assign 100 patients each to a test group and a control group. Patients prescribed insulin for at least three months and age of 40 years or below were included while, patients who were unable to answer and those not prescribed with insulin were excluded. Over the period, the test group received structured interventions, including telephone follow-ups, counselling sessions while the control group received standard care. Clinical measurements were taken and data were analysed using descriptive statistics.

**Results:** At baseline, the test group had mean FBS 164.5 mg/dL, PPBS 235.6 mg/dL, and HbA1C 8.45%, which reduced to 129.7 mg/dL, 188.2 mg/dL, and 7.28% after three months. The control group showed smaller reductions (FBS 160.4 to 144.3 mg/dL, PPBS 231.8 to 207.4 mg/dL, HbA1C 8.41% to 7.78%). Reductions in FBS, PPBS, and HbA1C were seen in 92%, 90%, and 90% of the test group vs 56%, 60%, and 54% in controls. HbA1C reduction was significantly greater in the test group (-1.17% vs -0.63%,  $p < 0.05$ ). Knowledge improved in 93.09% of the test group vs 14.3% of controls.

**Conclusion:** This study shows that structured education significantly improves glycaemic control and diabetes knowledge in young insulin-dependent patients. Key markers like FBS, PPBS, and HbA1C improved notably in the intervention group. Educated patients were more compliant and engaged in self-management. Empowering patients with information fosters better decision making and self-management in diabetes care.

**Keywords:** *Insulin, Interventions, Monitoring, Patient education, Type 1 diabetes*

## Comparative Study on Antioxidant Activity in *Taraxacum officinale*, *Phyllanthus amarus*, and *Leucas zeylanica*

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**Background:** An imbalance between free radicals and antioxidants causes oxidative stress. Natural plant-based antioxidants have gained significant attention due to their potential in managing diseases such as atherosclerosis, Alzheimer's disease, Parkinson's disease, and various cancers. While *Taraxacum officinale* (Family: Asteraceae; Common name: Dandelion), *Leucas zeylanica* (Family: Lamiaceae; Common name: Ceylon slitwort), and *Phyllanthus amarus* (Family: Phyllanthaceae; Common name: Bhumi Amla) plants have known medicinal uses, such as; anti-inflammatory, hepatoprotective, diuretic, antimicrobial, and hepatoprotective effects, comprehensive scientific validation of their antioxidant potential remains limited. Understanding their antioxidant efficacy contributes to knowledge on natural antioxidants and their potential application in healthcare and pharmaceutical industries.

**Objectives:** To evaluate and compare the antioxidant activities of the methanolic extracts of the above selected medicinal plants

**Methods:** The crude extracts from each dried plant were obtained using the maceration technique. A concentration series of each methanolic extract was assessed using the ferric reducing antioxidant power (FRAP) and 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging assay, and IC<sub>50</sub> values were obtained for each plant in both assays and their antioxidant activities were analysed using GraphPad Prism 10. Ascorbic acid was used as the reference compound for both antioxidant assays. Due to the small sample size and non-parametric distribution of data, Kruskal-Wallis H test was performed using SPSS to compare the IC<sub>50</sub> values across plant species. A significant level of  $p < 0.05$  was applied.

**Results:** The methanolic extract of *Phyllanthus amarus* showed strong antioxidant activity with IC<sub>50</sub> values of 32.33±18.60 mg/mL in the FRAP assay and 6.024±19.83 mg/mL in the DPPH assay. In contrast, *Leucas zeylanica* (IC<sub>50</sub>: 165.5 ± 37.83 mg/mL FRAP, 219.0 ± 27.17 mg/mL DPPH) and *Taraxacum officinale* (IC<sub>50</sub>: 180.1 ± 96.27 mg/mL FRAP, 82.85±27.53 mg/mL DPPH) exhibited comparatively weaker antioxidant activities. Ascorbic acid, used as the reference standard, demonstrated IC<sub>50</sub> values of 41.27±27.70 mg/mL (FRAP) and 2.096±23.96 mg/mL (DPPH). Statistical analysis indicated no statistically significant difference in the distribution of IC<sub>50</sub> values among the three plant extracts ( $p=0.142$ ).

**Conclusions:** Although the differences in IC<sub>50</sub> values were not statistically significant, the data suggest that *Phyllanthus amarus* has superior antioxidant potential compared to the methanolic extract of other tested plants. These findings warrant further investigation with larger sample sizes and biological replicates to confirm the observed trend.

**Keywords:** Antioxidant activity, DPPH assay, FRAP assay, Methanolic extracts, Oxidative stress

PP 03

## Synergistic Antibacterial Activity of Methanolic Extract of *Cinnamomum zeylanicum* Bark and *Curcuma longa* Rhizome

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**Background:** The combination of plant extracts has shown significant potential in enhancing antimicrobial efficacy through synergistic interactions. Such combinations may offer improved therapeutic outcomes, multitarget actions, reduced toxicity, lower dosage requirements, decreased resistance development, and wider activity against many pathogens. *Cinnamomum zeylanicum* (Sri Lankan cinnamon) and *Curcuma longa* (turmeric) are rich in phytochemicals and are renowned for their antibacterial properties. However, the type of pharmacodynamic interaction between the methanolic extracts from the bark of *C. zeylanicum* and the rhizome of *C. longa* grown in Sri Lanka, has not yet been investigated.

**Objective:** To evaluate the synergistic antibacterial activity of methanolic extracts of Sri Lankan *C. zeylanicum* bark and *C. longa* rhizome

**Methods:** Minimum inhibitory concentrations (MICs) of methanolic extracts were evaluated using the broth microdilution method, using Muller Hinton broth in a 96 well plate across the concentrations ranging from 100 mg/mL to 0.195 mg/mL with each concentration in triplicates. The synergistic antibacterial activity was determined using the checkerboard microdilution method and quantified by calculating the fractional inhibitory concentration index (FIC<sub>i</sub>) against clinical isolates of *Staphylococcus aureus* and *Escherichia coli*.

**Results:** The MIC of *C. zeylanicum* extract for both *S. aureus* and *E. coli* was 3.125 mg/mL. For *C. longa*, the MIC was 25 mg/mL against *S. aureus* and 50 mg/mL against *E. coli*. Synergistic and additive effects were observed with FIC<sub>i</sub> ranging from 0.25 to 0.625. The MICs at which synergistic effects observed were at 0.781 and 0.097 mg/mL of *C. zeylanicum* for both bacteria; for *C. longa*, the MICs were 25 and 12.5 mg/mL for *E. coli* and 12.5 and 6.25 mg/mL for *S. aureus*. Further, additive effects were observed at 0.195, 0.390 and 1.562 mg/mL of *C. zeylanicum* for both bacteria; for *C. longa*, the MICs were 25 and 6.25 mg/mL for *E. coli* and 12.5 and 3.125 mg/mL for *S. aureus*.

**Conclusions:** The combination of methanolic extracts of *C. zeylanicum* bark and *C. longa* rhizome demonstrated both synergistic and additive antibacterial effects against both *S. aureus* and *E. coli*.

**Keywords:** *Cinnamomum zeylanicum*, *Curcuma longa*, *Escherichia coli*, *Staphylococcus aureus*, Synergistic effect

PP 04

## In-vitro Antioxidant Activity of Methanol Extract of Medicinal Herbs Used in Athiyathi Kashayam: A Siddha Polyherbal Formulation

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**Background:** Antidiabetic drugs possess antioxidant properties that help to manage diabetic complications associated with oxidative stress. *Athiyathi Kashayam* (AK) is a polyherbal formulation consisting of *Ficus racemosa*, *Syzygium cumini*, *Salacia reticulata*, *Cassia auriculata*, and *Cassia fistula*. According to Siddha literature, it is utilized in the treatment of diabetes mellitus (DM). There has been a study reported on the antioxidant potential of *Kashayam* in India. However, there has been no investigation done on methanol extract of the herbs used in AK.

**Objective:** To evaluate antioxidant activity of methanol extract of medicinal herbs used in *Athiyathi Kashayam* using 2,2-diphenyl-1-picrylhydrazyl (DPPH) assay and ferric reduction assay

**Methods:** The fresh barks of *F. racemosa*, *S. cumini*, *C. auriculata*, *C. fistula* were collected from Kegalle District and *S. reticulata* was collected from Mullaithivu District. They were shade dried and powdered into fine powder. The crude drug was prepared according to the specified ratio, with equal amount of *F. racemosa*, *S. cumini* and *S. reticulata* and double amount of *C. auriculata* and *C. fistula*. The methanol extract of polyherbal formulation was prepared by the maceration process. The *in-vitro* anti-oxidant activity of polyherbal extract was evaluated through DPPH assay and ferric reduction assay using ascorbic acid as the standard.

**Results:** The IC<sub>50</sub> value of methanol extracts of AK was found to be 18.78 µg/mL, whereas in ascorbic acid it was 11.92 µg/mL. The ascorbic acid equivalents in ferric reduction assay for the formulation was 76.48 µg/mL, AAE/g at 200 µg/mL concentration.

**Conclusions:** This study indicated that, methanolic extract of the polyherbal AK was found to exhibit strong antioxidant activity. Further studies are needed to understand the *in-vivo* antioxidant potential of the polyherbal formulation.

**Keywords:** Anti-oxidant activity, Methanol extract of Aathiyathi khashyam, DPPH assay, Ferric reduction, Polyherbal



## Evaluation of Antimicrobial and Anti-inflammatory Properties of Ayurvedic Herbal Tonic ‘Gokshuraadi Peyawa’

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**Background:** The traditional Ayurvedic tonic ‘Gokshuraadi Peyawa’ includes three herbs, namely; *Tragia involucrata* L. (Wel Kahambiliya), *Tribulus terrestris* L. (Heen Nerenchi), and *Solanum virginianum* L. (Katuwel Batu), for treating urinary tract infections. There are several variations of *Peya* recipes in Ayurveda and traditional medicine. The traditional *Gokshuradi Peyawa* used in this research is a rice-free formulation. There is a lack of available research on this *peyawa*.

**Objectives:** To analyze the phytochemicals, antimicrobial, anti-inflammatory, and anti-biofilm activity of ethanolic and aqueous extracts of *Gokshuraadi Peyawa*

**Methods:** The study analysed phytochemicals qualitatively and assessed antimicrobial activity for selected bacteria and fungi by well diffusion, MIC and MBC tests. Crystal Violet assay was used to study the antibiofilm activity and egg albumin denaturation assay was used to assess the anti-inflammatory effect.

**Results:** Phytochemicals in both extracts, contained phenols, tannins, and flavonoids. Saponins and glycosides were present only in the ethanolic extract, whereas steroids and chalcones were found exclusively in the aqueous extract. Ethanolic extract showed zones of inhibition (ZOI) for *Pseudomonas aeruginosa* ATCC 27853 (11.67±0.54 mm), Methicillin-resistant *Staphylococcus aureus* (clinical strain) (11.30±0.60 mm) and *Staphylococcus aureus* ATCC 25923 (10.30±0.60 mm) and the highest activity against *Escherichia coli* ATCC 25922 (15.00±1.00 mm). *Candida albicans* ATCC10231 (22.00±1.00 mm) and *Candida glabrata* ATCC 90030 (21.30±0.60 mm) showed a significant ZOI among the tested fungi for ethanol extract. Neither extract inhibited *Klebsiella pneumoniae* ATCC 1706 or *Candida tropicalis* ATCC 13803. The aqueous extract showed no inhibition of tested microorganisms. The MIC for *E. coli* and MRSA was 62.5 mg/mL, while MBC reached 125 mg/mL. Strong anti-inflammatory effect, with maximum denaturation inhibition of 98.54% and 87.67% for the ethanolic extract and aqueous extract were shown respectively at 250 mg/mL. Ethanolic extract inhibited biofilm formation by 22.11% and 19.33% for *C. albicans* and *E. coli* at 250 mg/mL, respectively.

**Conclusions:** Compared to the aqueous extract, the ethanolic extract of *Gokshuraadi Peyawa* exhibited more antibacterial activity, was highly effective against gram-negative bacteria and *Candida albicans*. Ethanolic extract showed significant anti-inflammatory activity. However, the extract showed less insignificant biofilm inhibition. More investigation is required to study the toxicity of this medicine.

**Keywords:** Antibiofilm, Anti-inflammatory, Antimicrobial, Gokshuraadi peyawa

## Phytochemical and Bioactivity Analysis of Methanolic Extracts of 'Eranda Sapthakaya'

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**Background:** *Ricinus communis*, *Tribulus terrestris*, *Aegle marmelos*, *Aerva lanata*, *Solanum melongena*, *Citrus japonica*, and *Solanum virginianum* are the herbs used in the traditional ayurvedic decoction known as 'Eranda Sapthakaya' which is being used to treat urinary tract infection (UTIs), renal calculi, ankle oedema, heart failure, dysuria, loin pain, and backache. There is a lack of published literature on this herbal medicine.

**Objectives:** To analyse the phytochemicals, antimicrobial, anti-inflammatory, and anti-biofilm activity of the combined methanolic extract of this decoction

**Methods:** Seven dried plant powders were macerated in methanol, evaporated, and combined to achieve 300 mg/mL concentration. The study analysed phytochemicals qualitatively and assessed antimicrobial activity through well diffusion, Minimum Inhibitory Concentration (MIC), and Minimum Bactericidal Concentration (MBC) tests. Gentamicin (10 mg/mL) and fluconazole (600 µg/mL) were used as positive controls. Crystal violet assay was used to analyse the antibiofilm activity, and the egg albumin denaturation assay was used to assess the anti-inflammatory effect. Diclofenac (50 mg/mL) was the positive control used in anti-inflammatory study.

**Results:** Phytochemical analysis revealed the presence of alkaloids, flavonoids, phenols, and glycosides in the extract. The methanolic extract inhibited Methicillin-resistant *Staphylococcus aureus* (MRSA) (16.7±1.3 mm), *Staphylococcus aureus* (22.7±0.9 mm) and *Pseudomonas aeruginosa* (28.3±1.2 mm) but failed to inhibit *Escherichia coli*, *Candida* spp. and *Klebsiella pneumoniae* at 300 mg/mL concentration, suggesting its traditional use in UTIs which may be due to other therapeutic mechanisms. The MBC for *S. aureus* was 150 mg/mL and MIC was 75 mg/mL. The MBC for *P. aeruginosa* was 300 mg/mL and MIC was 150 mg/mL. The methanolic extract showed a strong anti-inflammatory effect with a maximum denaturation inhibition of 94.6% at 300 mg/mL. About 14% of biofilm activity was noticed for *S. aureus* at 300 mg/mL, however failed to inhibit biofilm formation of *P. aeruginosa*.

**Conclusions:** According to the findings, combination of methanolic extracts of seven medicinal plants possesses anti-inflammatory and antimicrobial properties that can be further investigated for novel antimicrobial compounds.

**Keywords:** Antibiofilm, Anti-inflammatory, Antimicrobial, Eranda Sapthakaya

## Regional Inequities in Access to Cardiovascular Medicines in Selected Areas of Sri Lanka

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**Background:** Cardiovascular diseases (CVDs) pose a substantial burden to the healthcare system of Sri Lanka, requiring consistent access to essential medicines for effective management. Disparities in the availability and affordability of these medicines between urban and semi-urban regions may negatively impact healthcare equity. Identifying and addressing these regional differences is vital for ensuring equitable access to cardiovascular care.

**Objective:** To compare the availability and pricing of essential cardiovascular medicines in privately owned pharmacies and State Pharmaceutical Corporation (SPC) pharmacies located in urban (Kandy, Kurunegala) and semi-urban areas (Nikaweratiya, Peradeniya) of Sri Lanka

**Methods:** A cross-sectional survey was conducted from June to October 2024 in four locations within Kandy and Kurunegala districts, following the WHO/HAI standardized methodology. Data were collected from 40 pharmacies; 36 privately owned and 4 SPC pharmacies, focusing on 13 essential cardiovascular medicines. The availability and prices of Originator Brands (OBs) and Lowest Priced Generics (LPGs) were compared, and Median Price Ratios (MPRs) were analysed.

**Results:** In privately owned pharmacies, OB availability was notably higher in urban areas; Kandy and Kurunegala (4.75%), compared to semi-urban Nikaweratiya (1.58%). LPGs showed greater accessibility in urban areas (Kandy: 79.83%, Kurunegala: 77.05%) compared to semi-urban areas (Nikaweratiya: 63.84%, Peradeniya: 73.57%). LPG availability at SPC pharmacies was also higher in urban areas (Kandy: 81.25%, Kurunegala: 75.62%) than in semi-urban locations (Nikaweratiya: 75%, Peradeniya: 68.75%). Regarding pricing, the median MPR for LPGs in privately owned pharmacies was uniform (0.27) across all areas, whereas Peradeniya had the highest (0.19) and Nikaweratiya the lowest (0.15) in SPC pharmacies.

**Conclusions:** Availability of essential cardiovascular medicines was consistently higher in urban than semi-urban areas. There was no significant price variation across regions in either sector. Targeted improvements in medicine distribution and supply chain management are recommended to promote equitable healthcare access across Sri Lanka.

**Keywords:** Accessibility, Availability, Affordability, Cardiovascular medicines

## Chemical Stability of Sublingual Glyceryl Trinitrate Tablets in Outpatient Settings

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**Background:** Sublingual Glyceryl Trinitrate (GTN) tablets are essential in managing angina. However, their chemical stability can be compromised by evaporation of the active pharmaceutical ingredient (API), especially when patients do not follow appropriate handling and storage practices.

**Objective:** To compare the chemical stability of sublingual GTN tablets issued at Teaching Hospital Jaffna (THJ), and after one month outpatient use

**Methods:** A descriptive cross-sectional study was conducted among 50 patients receiving GTN at the Cardiology Clinic, THJ. Patients were randomly selected from the three dispensing counters in the Pharmacy in which first set of medication sample (three tablets from each counter) was collected. The second set of samples were collected from the selected outpatients, who received GTN from respective counters during home visits after one month of typical outpatient use. Chemical stability was assessed by determining the amount of API using a UV-visible spectrophotometer at a wavelength of 260 nm based on the BP. The statistical significance of the difference in API levels of the samples obtained from counters and patients were evaluated by a paired sample *t*-test at 5% significance level using the software SPSS version 23.0.

**Results:** The initial mean $\pm$ SD API content in tablets from counters 1, 2, and 3 was 0.4116 $\pm$ 0.0884 mg, 0.4067 $\pm$  0.0933 mg, and 0.3824 $\pm$ 0.1176 mg, respectively, which were below the pharmacopeial limit of 90% (0.45 mg). After four weeks of outpatient use, the mean $\pm$ SD API levels in patient samples further declined to 0.1797 $\pm$ 0.0883 mg, 0.1424 $\pm$ 0.0980 mg, and 0.2086 $\pm$ 0.0744 mg for counters 1, 2, and 3, respectively. A significant difference ( $p<0.05$ ) was observed between the API levels in the counter and the patients' sample and significantly deviating from the pharmacopeial standards.

**Conclusions:** The study demonstrates that the API levels of sublingual GTN tablets were already below pharmacopeial limits at the point of dispensing and further declined significantly after four weeks of outpatient storage. Further investigation is required to assess the patients' practices related to handling and storage of GTN tablets.

**Keywords:** *Active pharmaceutical ingredient, Chemical stability, Glyceryl trinitrate*

PP 09

## Adherence to Good Dispensing Practices by Hospital Pharmacists and the Patients' Perception on the Dispensing Services Provided: A Cross-sectional Observational Study

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**Background:** Pharmacists following Good Dispensing Practices (GDP) is essential in ensuring safe and effective medication use with acceptable patient satisfaction.

**Objectives:** To assess the adherence of hospital outpatient department (OPD) pharmacists to the proper dispensing cycle and the patients' perception on the services they receive from the OPD pharmacists in a Sri Lankan tertiary care hospital

**Methods:** This cross-sectional observational study was conducted at the OPD pharmacy of Teaching Hospital Jaffna. A structured checklist consisting of 32 evaluation points based on the critical steps of the standard dispensing cycle was developed to assess the dispensing practices of the OPD hospital pharmacists. The dispensing process followed by the hospital pharmacists was observed based on this checklist. The key patients' perception of the quality of service they received from hospital pharmacists at OPD was assessed using a validated questionnaire focusing on communication, clarity of instructions, and overall interaction quality. Seven pharmacists working in the OPD were observed during 78 pharmacist-patient interactions. Patient responses for perception-related questions were given a score ranging from 0 to 30 where 0 indicates a negative perception.

**Results:** On average, pharmacists adhered to about 25 out of the 32 checked steps in the dispensing cycle. Commonly overlooked steps were verifying the patient's identity, providing comprehensive counselling on drug usage, and confirming the patient's understanding of their prescribed medications. The mean $\pm$ SD perception score was 24.2 $\pm$ 1.7, indicating moderate satisfaction among patients with the services provided by the hospital pharmacists at OPD.

**Conclusion:** Overall, the hospital pharmacists at OPD followed moderately acceptable GDP with respect to the standard dispensing cycle, achieving considerable satisfaction among the patients regarding their service.

**Keywords:** Dispensing cycle, Good dispensing practices, Hospital pharmacists, Patients' perception

PP 10

**Self-medication Practices towards Managing COVID-19 among Pharmacy Undergraduates at the Faculty of Allied Health Sciences, University of Ruhuna, Sri Lanka**

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**Background:** Self-medication has become a significant global health concern, particularly in developing countries, due to risks like delayed diagnosis, adverse drug interactions, and potential health complications. The COVID-19 pandemic heightened this issue as lockdowns and overburdened healthcare systems led individuals to rely on self-treatment. Misuse of drugs, including paracetamol, ibuprofen, and hydroxychloroquine, often led to severe side effects. In Sri Lanka, limited research exists on self-medication among pharmacy students, necessitating an in-depth exploration of their behaviours, motivations, and consequences of such practices.

**Objectives:** To identify the drugs self-medicated for COVID-19 by pharmacy undergraduate students at the Faculty of Allied Health Sciences, University of Ruhuna, and to identify common side effects experienced

**Methods:** A descriptive, cross-sectional survey using convenience sampling, was conducted among pharmacy undergraduate students (n=79) to collect data on self-medication practices during the COVID-19 pandemic. The questionnaire included questions on demographic information, types of drugs used, sources of information, and side effects experienced. The survey was conducted in 2023.

**Results:** Majority of the students were between 22-24 years old (69.6%) and females (75.9%). It was revealed that a majority of students engaged in self-medication. The most commonly used drugs were paracetamol (58.2%), vitamins (39.2%), cetrizine (31.6%), chlorpheniramine (27.8%), omeprazole (17.7%) and amoxicillin (13.9%). Most students had used paracetamol for fever (24.1%) and headache (21.5%), amoxicillin for fever (7.6%), cetrizine (17.7%), and chlorpheniramine (8.9%) for runny nose. Common side effect experienced was abdominal discomfort (15.8%).

**Conclusions:** This study provides insights into the self-medication practices among pharmacy undergraduate students during the COVID-19 pandemic. The findings highlight the need for better education and regulation to ensure safe medication practices and to address the reasons behind self-medication. Further research in the area is suggested to find the misuse of medicines due to self-medication.

**Keywords:** COVID-19, Paracetamol, Pharmacy undergraduates, Self-medication

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## **Theme: Nursing and Midwifery**

## Applications of Artificial Intelligence in the Diagnosis, Management and Control of Parkinsonism: A Systematic Review

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**Background:** Parkinson disease (PD) is the second most prevalent neurodegenerative disorder, affecting around ten million people worldwide and typically develops after age 50, with average age of onset around 60 years. It is characterised by progressive motor and non-motor symptoms. Traditional diagnostic methods often miss early signs, leading to delayed treatment. Recent advancements in artificial intelligence (AI) offer new hope, AI is increasingly used in the management of PD by utilising MRI analysis, smartwatches, sensors, wearable devices, and smartphone apps. While many researchers have explored AI for diagnosis, early detection, and monitoring, a considerable vacuum remains in its use for rehabilitation and therapeutic management of PD symptoms.

**Objective:** To provide an overview of recent uses of AI in managing PD

**Methods:** The review followed the PRISMA guidelines, using a systematic search across Google Scholar, ScienceDirect, and PubMed. An initial 47 relevant peer-reviewed studies on AI applications in Parkinsonism were identified. Studies were included if they presented original clinical or technical data. Reviews and articles with, irrelevant, or insufficient data were excluded.

**Results:** After screening, 25 studies were selected for final analysis. Five AI application areas were identified as ‘diagnosis’, ‘therapy’, ‘monitoring’, ‘early detection’, and ‘rehabilitation’. In diagnosis, 3D and 2D Convolutional Neural Networks (CNNs) achieved 88.90% and 72.22% accuracy using MRI data. Electroencephalography (EEG)-based classifiers showed Area Under the Curves (AUC) up to 99.4%. Drug repurposing tools like Therapeutics Graph Neural Network (TxGNN) revealed potential in identifying novel therapeutics. Monitoring tools, including wearable and nonwearable systems, reported over 97% precision. A CNN model showed 0.79 AUC for early detection using Cell Painting images, while other models using spiral drawings, speech, and breathing patterns reached AUCs up to 0.9 and accuracies up to 97%. In rehabilitation telemedicine and Tele-rehabilitation enhance patient management. AI-powered Tele-rehabilitation enables remote access to care, personalized therapy, continuous monitoring and feedback at home.

**Conclusions:** High-performance models, particularly those using neuroimaging, EEG, and both wearable and non-wearable devices, demonstrate the potential to improve the accuracy and efficiency. However, ongoing validation and integration with clinical workflows remain major challenges to fully realizing the potential of AI applications in PD.

**Keywords:** *Artificial intelligence, Diagnosis, Drug repurposing, Machine learning, Parkinson disease*



## The Experiences of Nursing Undergraduates Caring for Chronic Wounded Patients in Sri Lanka: A Qualitative Study

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**Background:** Chronic wounds present a significant healthcare challenge, where the burden of non-communicable diseases such as diabetes and obesity is rising. These wounds often require prolonged care, posing physical, emotional, and psychological challenges for both patients and caregivers. Nursing undergraduates are increasingly exposed to managing chronic wounds, often without prior experience or adequate preparation. Understanding their experiences is essential to improving education, training, and emotional support, ultimately enhancing the quality of chronic wound care in clinical settings.

**Objectives:** To explore the experience of chronic wound care among nursing undergraduates in the University of Ruhuna and the University of Colombo

**Methods:** An exploratory descriptive qualitative study was conducted among 13 final-year nursing undergraduates at two-state universities in Southern province and Western province in Sri Lanka using a purposive sampling method. face-to-face interviews were conducted using a semi-structured interview guide. Data were transcribed, examined, and organised, then subjected to thematic analysis using an inductive approach.

**Results:** Analysis identified six key themes; (1) *Initial reactions and first-time experiences*, characterized by fear, discomfort, and lack of confidence; (2) *Challenges in chronic wound care*, such as emotional burden, fear of infection, unpleasant wound characteristics, and inadequate supervision; (3) *Skill development and learning progression*, marked by improved clinical judgment and technical abilities through practical exposure; (4) *Positive outcomes and patient success stories*, which fostered motivation and professional satisfaction; (5) *Enhancing preparedness and future readiness*, highlighting the importance of early exposure, simulation training, and stronger theoretical grounding; and (6) *Emotional and psychological impact*, involving empathy-driven emotional strain and the need for mental health support. These findings illustrate the complex clinical, emotional, and educational dimensions of undergraduate nursing students' experiences in managing chronic wounds.

**Conclusions:** Nursing undergraduates face significant emotional and clinical challenges when caring for chronic wounds, but demonstrate notable skill development and resilience. Enhancing training through early exposure, simulation, and psychological support is essential to improve preparedness and well-being. Addressing these needs will better equip students to provide effective, compassionate chronic wound care in the future.

**Keywords:** *Challenges, Chronic wounds, Experiences, Nursing undergraduates, Qualitative study*

## Knowledge, Attitudes and Practices on the Safe Handling of Cytotoxic Drugs among Nurses at Apeksha Hospital, Sri Lanka

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**Background:** Cytotoxic drugs (CDs) play a critical role in cancer treatment. However, their handling poses significant occupational health risk to nurses. Adherence to safe handling practices is essential to minimize exposure and potential adverse effects. Global evidence shows persistent gaps between recommended guidelines and everyday practice. In Sri Lanka, especially within the country's main cancer centre, Apeksha Hospital; there is limited data on nurses' knowledge, attitudes, and practices, highlighting the need for focused evaluation.

**Objective:** To assess the knowledge, attitudes, and practices regarding the safe handling of CDs among nurses at Apeksha Hospital, Sri Lanka

**Methods:** A descriptive cross-sectional study was conducted among 152 registered nurses working in Oncology units at Apeksha Hospital, who were selected through simple random sampling. Data were collected using a pre-tested, structured, paper-based, self-administered questionnaire comprising four sections: socio-demographic details, knowledge, attitudes, and practices regarding the handling of CDs. Descriptive statistics, including frequencies and percentages, were used to analyse data.

**Results:** Of the nurses, 68% (n=103) were aged 25-29 and 51% (n=78) had formal training on cytotoxic-drug safety. Nurses demonstrated strong foundational knowledge on cytotoxic-drug safety, with 99% (n=151) recognising glove use and 93% (n=141) recognising hand hygiene. However, knowledge regarding more specific aspects of Personal Protective Equipment (PPE) use was less consistent as only 61% (n=93) knew gowns are single-use, and 54% (n=82) correctly identified the need to change gloves every 30 minutes. Exposure was routine with 99% (n=150) administered drugs, 77% (n=117) cleaned spills, and 88% (n=134) disposed of waste, but protective measures lagged with just 48% (n=73) wore gowns, 45% (n=68) goggles, and 29% (n=44) prepared drugs inside a bio-safety cabinet. Although 43% (n=65) endorsed the guidelines strictly, the findings highlight a persistent knowledge-practice gap in PPE use.

**Conclusions:** Despite a high recognition of glove use and hand hygiene, nurses at Apeksha Hospital exhibit a significant gap between knowledge and practice regarding cytotoxic-drug safety. This persistent knowledge-practice gap highlights the urgent need for enhanced training, stricter enforcement of PPE protocols, and improved safety infrastructure to ensure a safer working environment for staff.

**Keywords:** Cytotoxic drugs, Occupational safety, Personal protective equipment, Safe handling

## Knowledge and Attitudes Regarding the Selection of Elective Cesarean Section among Postnatal Women Admitted to German-Sri Lanka Friendship Hospital for Women, Galle

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**Background:** With the increasing rates of the caesarean deliveries, understanding of the empowerment provides by the maternal knowledge and attitudes in making the choice of having abdominal delivery is crucial.

**Objective:** To evaluate the maternal knowledge and attitudes in clinical decision-making of elective caesarean section surgery in the German-Sri Lanka Friendship Hospital for Women, Galle

**Methods:** A descriptive cross-sectional study was conducted among 106 postnatal women who had undergone Elective Lower Section Caesarean Section (EL/LSCS) in the hospital, with their consent. A pre-tested interviewer administered questionnaire was used to gather data. Data were analysed using SPSS version 26.0 and interpreted using appropriate descriptive statistics. Chi-square test was used to determine the association between categorical variables.

**Results:** The majority (97.2%) of women were knowledgeable about caesarean section. A smaller number of women (13.2%) had undergone a caesarean section upon their own request. The majority (75.5%) of the women agreed that they were aware of their right to make decisions about EL/LSCS. A mass preponderance (78.3%) of women had made their decision on the same day. A significant proportion (77.4%) of women had received enough opportunity to receive balanced information, to discuss and clarifications, to get timely information and to involve support persons when making their decision about EL/LSCS. The most of the postnatal women in the sample (91.5%) had agreed with their medical care provider about how to proceed with the procedure. The women which had been undergone only a past caesarean delivery is 34%. A few numbers of women (16%) had undergone two caesarean deliveries or more. The attitudes that showed a more significant association ( $p<0.05$ ) with their decision of caesarean delivery was level of anxiety and fear ( $p=0.012$ ) and the educational status ( $p=0.013$ ). Fear of pain ( $p<0.001$ ), sexual problems ( $p<0.001$ ), organ prolapse ( $p=0.01$ ), and safety issues ( $p<0.000$ ) were the other attitudes associated with considered decision-making aspects.

**Conclusions:** This study shows high maternal knowledge of caesarean section and strong awareness of decision-making rights to involve in the decision-making process along with their consultant. It highlights the importance of providing balanced information and emotional support to the women when the decision is made to select elective caesarean delivery.

**Keywords:** *Clinical decision-making, Elective caesarean section, Maternal knowledge*

## Effectiveness of Simulation Training in Nursing Education: A Systematic Review

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**Background:** Simulation training has become a widely used pedagogical tool in nursing education, offering a safe and controlled environment for students to develop clinical skills and decision-making abilities. Over the last five years, the effectiveness of simulation training in enhancing nursing education has been increasingly explored in various studies.

**Objective:** To systematically review the effectiveness of simulation training in nursing education

**Methods:** The systematic review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines and involved a comprehensive search of PubMed, ScienceDirect, Web of Science, CINAHL, and Cochrane databases for studies published between 2019 and 2025. The review was also registered with PROSPERO (CRD420251012168). Relevant keywords such as ‘Simulation training’, ‘Nursing education’, ‘Effectiveness’, ‘Learning outcomes’, and Boolean operators were used to refine the search. The initial search yielded 875 articles, with 328 duplicates removed. After screening titles and abstracts, 465 studies were excluded, followed by 46 after full-text review. A total of 34 studies met the inclusion criteria, focusing on simulation-based nursing education, assessing outcomes such as clinical skills and decision-making. Excluded studies included grey literature, non-nursing topics, unclear interventions, and poor methodology. Data were extracted and critically appraised using Critical Appraisal Skills Programme (CASP) checklists.

**Results:** Among the 34 included studies, 79.41% reported that simulation training had a positive impact on clinical competence, decision-making, and critical thinking. High-fidelity simulations that replicate real-life scenarios demonstrated the most effective outcomes. Students showed greater satisfaction with simulation-based learning compared to traditional methods and reported improvements in confidence, communication skills, and patient safety awareness. Variability in effectiveness was influenced by the type and length of simulation, student engagement, and instructor support. Challenges identified included limited access and high costs associated with advanced simulation technologies.

**Conclusions:** Simulation training has proven to be an effective tool in nursing education, significantly improving clinical skills, critical thinking, and patient safety awareness. While high-fidelity simulations tend to produce the most positive outcomes, standardisation of simulation methods and further research into long-term effects on clinical practice are needed.

**Keywords:** *Clinical skills, Critical thinking, Nursing education, Nursing students, Simulation training*

## Demographic, Clinical, Laboratory, and Imaging Characteristics of Patients with Renal Stone Disease: A Study from National Hospital, Kandy

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**Background:** Renal stone disease is a significant illness with a massive impact on patients. Data relating to the profile of renal stone patients in the central province of Sri Lanka is limited, despite the growing prevalence of the illness. This research study aimed to bridge this gap through analysis of the renal stone patients who attend the urology clinic at National Hospital, Kandy.

**Objective:** To identify the demographic, clinical, laboratory, and imaging characteristics of patients with renal stone disease attending the urology clinic, National Hospital, Kandy

**Methods:** A total of 110 patients with renal stones participated in this descriptive cross-sectional study. The socio-demographic characteristics, clinical presentation, laboratory and imaging findings, and morphological features of the renal stones were collected using an interviewer-administered questionnaire and clinical records. SPSS version 26.0 was used to perform statistical analysis.

**Results:** The majority of renal stone patients were males (74.5%), with Sinhalese being the predominant ethnic group (80.9%) and the mean $\pm$ SD age being 47.1 $\pm$ 13.5 years. The most common symptoms reported by patients were pain (91.8%) with dysuria and lower urinary tract symptoms, as reported by 60% and 46.4% of all participants, respectively. Hypertension (66.4%) and diabetes (64.5%) were seen to be the most common comorbidities. Urinalysis was ordered for 68.2% of all patients, and imaging modalities primarily involved ultrasonography (91.8%). Renal stones were most frequently located at the right renal calyx (49.1%) and pelvis (28.2%). The mean $\pm$ SD stone size was 9.4 $\pm$ 6.1 mm.

**Conclusion:** This study underpins the characteristics of renal stone patients in a selected Sri Lankan cohort, highlighting the role of demographic features, comorbidities, and laboratory and imaging protocol. The findings of this study provide important information which can be utilized for improving diagnosis, prevention and management strategies that are tailored to target the population.

**Keywords:** Clinical presentation, Demographic features, Imaging characteristics, Renal stones

## Stroke Specific Health-related Quality of Life and Associated Socio-demographic Factors among Stroke Survivors in Selected Teaching Hospitals in Western Province, Sri Lanka

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**Background:** Stroke is a major global health concern, ranking second in mortality and contributing significantly to long-term disability. Health-related quality of life (HR-QoL) is a key post-stroke outcome indicator. According to World Health Organisation, stroke accounts for approximately 11% of annual deaths in Sri Lanka.

**Objective:** To assess the level of HR-QoL and sociodemographic factors among stroke survivors in selected Teaching Hospitals in Western Province, Sri Lanka

**Methods:** A descriptive cross-sectional study was conducted with 206 stroke survivors, 3 months to 1-year post-stroke, selected via convenience sampling from stroke units and neurology clinics at the National Hospital Colombo and Colombo North Teaching Hospital. Data were collected using an interviewer-administered questionnaire including socio-demographic information and the Stroke-Specific Quality of Life (SS-QoL) scale. The SS-QoL was translated into Sinhala and Tamil using forward-backward translation and validated by two consultant neurologists. Pre-testing involved 22 participants. The SS-QoL showed strong reliability (Cronbach's  $\alpha \geq 0.73$ ). This study adopted SS-QoL scoring from Indian and Chinese contexts-low (49-120), moderate (121-180), and high (181-245) QoL-and analysed data using SPSS version 21.0 with descriptive and inferential statistics.

**Results:** Among the 206 participants (response rate: 95.7%), the mean $\pm$ SD age was 60.34  $\pm$ 10.95; 42.7% were females, 57.3% were males, and 89.8% were married. Most had education up to G.C.E.O/L (48.1%), were Sinhala (80%), Buddhist (71.8%), and employed (75.2%). Most participants (69.9%) earned less than 50,000 LKR per month. Quality of life (QoL) varied significantly, with 24.3% of participants reporting low QoL, 45.1% moderate QoL, and 30.6% high QoL. Financial stability was a significant factor influencing QoL, with higher income levels correlating with better post-stroke outcomes ( $\chi^2=13.677$ ,  $p=0.008$ ). Other socio-demographic factors, including age, gender, and education, showed no significant associations with QoL.

**Conclusion:** The HR-QoL of the survivors was moderate. Financial stability significantly influenced QoL, highlighting the need for economic support in post-stroke care.

**Keywords:** Disability, Financial stability, Health-related quality of life, Mortality, Stroke

## Association between Psychological Status, Sleep Quality and Academic Performance among Nursing Undergraduates in a Sri Lankan State University

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**Background:** Nursing undergraduates experience higher levels of stress due to academic and clinical demands, impacting their sleep quality and academic performance. There are limited evidences on the relationship between stress, sleep quality and academic performance among nursing undergraduates in local context. This study provides insights for curriculum adjustment and institutional support systems.

**Objectives:** To assess the association between psychological status, sleep quality and academic performance among nursing undergraduates

**Methods:** A descriptive cross-sectional and correlational study was conducted among 200 nursing undergraduates at the University of Colombo. A pre-tested validated self-administered questionnaire consisting of three sections including, sociodemographic data, Depression, Anxiety and Stress Scale, and Pittsburgh Sleep Quality Index, was used. Chi-square test, Spearman's correlation test, linear regression analysis, and multiple regression analysis were used. The Grade Point Average (GPA) was obtained to assess the academic performance. The level of significance was considered to be  $p < 0.05$ .

**Results:** Response rate was 78% (200), with majority (65%) being females. Majority of the respondents (40.0%) had a GPA of  $2.00 \leq \text{GPA} < 3.00$ . Extremely severe symptoms were prevalent among the participants; depression (10.5%), anxiety (27.5%), and stress (4.0%). Majority of the participants (65%) had poor sleep quality. Statistically significant associations were identified between depression levels and satisfaction with nursing degree ( $p = 0.048$ ), anxiety levels, gender ( $p = 0.015$ ), and religion ( $p = 0.026$ ). Multiple regression analysis revealed that stress was a statistically significant negative predictor of academic performance ( $t = -2.345$ ,  $p = 0.020$ ), even though the overall model was not significant ( $R^2 = 0.012$ ,  $p = 0.171$ ).

**Conclusions:** Although the overall regression model was not statistically significant, stress was identified as an individual factor significantly associated with lower academic performance. A significant amount of the respondents experienced high levels of stress and poor sleep quality. The results suggest that stress management strategies, and sleep hygiene education should be incorporated into nursing curricula to promote wellbeing and academic outcomes.

**Keywords:** Academic performance, Anxiety, Nursing undergraduates, Sleep quality, Stress



## Application of Artificial Intelligence on Neurodegenerative Disorder Care: A Scoping Review

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**Background:** Neurodegenerative diseases, including Alzheimer's disease, Parkinson's disease, and amyotrophic lateral sclerosis, involve progressive neuronal degeneration, resulting in cognitive and functional impairments. The rising prevalence of these conditions highlights the potential of artificial intelligence (AI) as an innovative tool to advance their diagnosis and management.

**Objectives:** To evaluate the current applications of AI in the diagnosis, management, and treatment of neurodegenerative diseases

**Methods:** Following the Arksey and O'Malley framework for scoping reviews, this review involved a systematic search of literature across four databases, including CINAHL, PubMed, Science Direct, and Google Scholar, published from 2020 to 2025. Studies related to AI in neurodegenerative disorders were selected based on diagnostics, treatment, patient care, and AI technologies, with 20 articles included in the review.

**Results:** The scoping review identified five key applications of AI in the care and management of neurodegenerative disorders: (1) Diagnostic advancement, (2) Predictive modeling, (3) Drug discovery, (4) Clinical trial enhancement, and (5) Personalized medicine. AI has demonstrated remarkable potential in early detection by analyzing complex datasets. These include medical imaging, genetics, and clinical records, which help identify disease markers and predict progression. Predictive modeling aids disease trajectory assessment and personalized care planning. AI accelerates drug discovery by identifying therapeutic targets and addressing the complexity of these diseases. It also enhances clinical trial efficiency by optimising design and data analysis. AI-driven personalised medicine can offer tailored treatments to individual patient profiles, improved therapeutic outcomes, and minimise adverse effects.

**Conclusions:** AI has a significant impact on the care and management of neurodegenerative disorders, enhancing diagnostics, predictive modeling, drug discovery, clinical trials, and personalised medicine. Its ability to analyse complex data accelerates early detection and treatment planning, ultimately improving patient outcomes and optimising therapeutic strategies. However, ethical concerns, data privacy, and potential biases must be addressed. Continued research and interdisciplinary collaboration are key to unlocking full potential of AI responsibly.

**Keywords:** Artificial intelligence, Diagnostics, Neurodegenerative disorders, Personalised treatment



## Knowledge, Attitudes and Practices towards Glaucoma Management among Patients Attending to Eye Clinic at District General Hospital Hambantota, Sri Lanka

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**Background:** Glaucoma, ‘the silent thief of sight’, is a leading cause of irreversible blindness worldwide and it is characterized by optic nerve damage often associated with elevated intraocular pressure (IOP). The burden of glaucoma remains high although it has advancements in treatment. Through enhanced awareness, early diagnosis, and adherence to treatment protocols this burden could be managed.

**Objectives:** To investigate the current level of knowledge, attitudes, and practices (KAP) on glaucoma management among patients attending the eye clinic at Hambantota General Hospital

**Methods:** A descriptive cross-sectional study was conducted among 384 patients with glaucoma selected through simple random sampling. An interviewer administered, validated Knowledge, Attitude, and Practice questionnaire used in a Saudi Arabian study on glaucoma patients was pre-tested and used to collect data. Data were analysed using SPSS software.

**Results:** Among the 384 participants 72.4% (n=278) were aged between 51-70 years. The mean±SD age of the sample was 62.3±8.87 years. Majority were females (51.6%, n=198), married (93.8%, n=360), educated to primary level (43%, n=165), monthly income <5000 LKR (34.1%, n=131) and 49.7% (n=191) had the disease for 1-5 years. Further mean±SD knowledge score was 9.6±1.3 (range 4-20) and 98.2% (n=377) had poor level of knowledge. Similarly mean±SD attitude score was 18.9±2.7 (range 7-35). Majority of the participants (83.9%, n=322) had poor level of attitude regarding glaucoma management. The mean±SD practice score was 11.1±2.0 (range 5-25) and 97.1% (n=373) had poor level of practice regarding glaucoma management. Significant associations were found between knowledge levels and marital status ( $p=0.022$ ), time since diagnosis ( $p=0.001$ ), and having undergone surgery ( $p=0.001$ ); attitudes and economic status ( $p=0.014$ ); and practices and education level ( $p=0.05$ ), and religion ( $p=0.026$ ).

**Conclusions:** Targeted educational interventions should be developed to address the gaps in knowledge, attitudes, and practices. Special focus should be placed on economic status, education level, and cultural factors to enhance the effectiveness of these interventions.

**Keywords:** Attitudes, Glaucoma management, Knowledge, Practices

## Prevalence and Causes for Lower Limb Amputation at the National Hospital Galle

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**Background:** Lower limb amputation (LLA) has become a burden worldwide high morbidity and mortality rates.

**Objective:** To assess the prevalence and causes of LLA among the surgical patients admitted to the National Hospital Galle (NHG)

**Methods:** A retrospective, observational study was conducted at NHG. The bed head tickets of the patients admitted to the general surgical wards of NHG during January 2018 and December 2023 were reviewed to identify the patients underwent lower limb amputation and related causes.

**Results:** During the given period, the total admissions to the general surgical wards were 145,700. Of them, 685 patients had undergone LLA which accounts for 470 persons with amputations per 100,000 of admissions to the general surgical wards in the hospital. A total of 690 LLA had been performed in 685 patients during this period with 05 patients experienced more than one amputation. The mean±SD age of the amputees was 62.10±14.71 years. Majority of them (n=425, 62%) were males. Diabetes mellitus related peripheral vascular disease was the main cause for LLA in 72.7% (n=500) while only 1.9% (n=13) was due to malignancy, mainly osteogenic sarcoma, 13.9% was due to trauma (n=95), 5.4% (n=37) was due to ischemia and 6.1% (n=42) was due to infection. Of them, 64.4% (n=441) of the amputations were below knee amputations, 25% (n=171) were above knee amputations and 8.3% (n=57) were fore-foot amputations, 1.6% (n=11) were hip disarticulations and 0.7% (n=5) were through knee amputations. Amputation among young ages were mainly due to trauma and malignancy while diabetes mellitus related peripheral vascular disease, ischemic related amputation were main causes in elderly patients in their sixth, seventh and eight decades. In comparison, the amputation frequency has increased by 100% from 92 in 2018 to 184 in 2023.

**Conclusion:** LLA is highly prevalent among surgical patients admitted to NHG, primarily due to peripheral vascular disease related to diabetes mellitus.

**Keywords:** Causes, Lower limb amputation, Prevalence

## Nurses' Knowledge Regarding Monitoring and Reporting Adverse Drug Reactions

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**Background:** Adverse drug reactions affect patient safety and healthcare quality. Nurses' involvement in pharmacovigilance is vital for effective monitoring, timely reporting, and management of ADRs, in accordance with guidelines by the National Medicines Regulatory Authority (NMRA).

**Objective:** To assess the level of knowledge regarding the monitoring and reporting of ADRs among nurses attending KIU University

**Methods:** A descriptive cross-sectional study was carried out among registered nurses working at government hospitals in Sri Lanka and attending KIU (a non-state university in Sri Lanka) for higher studies. Participants were recruited through simple random sampling. Data were collected using a researcher-developed, pre-tested, online questionnaire comprising sections on baseline characteristics and knowledge on monitoring and reporting practices of ADRs. Total scores were used to assess overall knowledge, categorized as follows: >80-good, 60-80-moderate, <60-poor-knowledge. Data was analysed using descriptive and inferential statistics with SPSS.

**Results:** The study included 400 participants. The mean±SD age and working experience were 35.37±4.06 years and 10.51±4.63, respectively. The majority were female (94.5%) and had received training on ADR (60.5%). The mean±SD total knowledge score was 85.05±23.60, with 72.8% scoring ≥80.01, indicating a high level of ADR awareness. The mean±SD score for ADR monitoring knowledge was 65.86±25.18, indicating a moderate to high level of understanding, while the mean score for ADR reporting knowledge was 56.26±26.45, reflecting moderate-awareness. Chi-square analysis showed significant associations between ADR knowledge and age ( $p=0.000$ ), gender ( $p=0.033$ ), work experience ( $p=0.000$ ), clinical setting ( $p=0.000$ ), involvement in patientcare ( $p=0.000$ ), and prior ADR training ( $p=0.000$ ), emphasizing the importance of experience and training in enhancing ADR-related knowledge.

**Conclusion:** Despite reporting moderate-level knowledge regarding the monitoring and reporting of ADRs, expansion of nurses' knowledge and practice is vital. Monitoring and reporting ADRs were associated with the selected personal and professional characteristics. Integration of pharmacovigilance into nursing education, and the implementation of user-friendly ADR reporting systems are recommended.

**Keywords:** Adverse drug reactions, Patient safety, Pharmacovigilance

## Factors Influencing the Choice and Deviation from Planned Spontaneous Vaginal Delivery among Mothers Admitted to Kahawatta Base Hospital Ratnapura, Sri Lanka

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**Background:** Spontaneous vaginal delivery (SVD) is preferred for its health benefits, but maternal choices and medical factors influence its prevalence. Rising cesarean rates highlight the need to understand deviations from planned SVD.

**Objective:** To investigate the associated factors influencing the choice of SVD and deviation from planned SVD among mothers admitted for childbirth at Kahawatta Base Hospital, Ratnapura, Sri Lanka

**Methods:** A descriptive cross-sectional study, was conducted among 120 postnatal mothers, recruited through convenience sampling. Data was collected through an interviewer-administered questionnaire, developed based on previous literature. Data was analysed using SPSS version 25.0, and Chi-square test was used to assess associations.

**Results:** The majority of the mothers were aged 26-35 years (74.2%, n=89) (mean±SD; 31.42±4.65), married (90.8%, n=109), and had education up to the Ordinary Level (72.5%, n=87). The Most resided in rural areas (65.0%, n=78) and were unemployed (84.2%, n=101). Most deliveries occurred at >37 weeks gestation (59.2%, n=71), with newborns weighing between 2.5-3.5 kg. Of 120 mothers, 35.8% (n=43) of deliveries deviated from planned SVD to LSCS (30.8%, n=37) and instrumental delivery (5.0%, n=6). The Chi-square test results showed significant associations between ethnicity ( $p=0.018$ ) and occupation ( $p=0.012$ ) with the choice of mode of delivery. Moreover, obstetric history of antepartum hemorrhage and post-partum hemorrhage ( $p=0.022$ ) and presentation of liquor ( $p=0.007$ ) were significantly associated with the deviation from planned SVDs.

**Conclusion:** Ethnicity and occupation significantly influence the mode of delivery, highlighting the need for culturally sensitive and employment-focused maternal healthcare strategies. It is recommended to strengthen antenatal care by identifying high-risk mothers early and providing targeted counseling on delivery options. Enhancing maternal education and improving access to timely obstetric interventions, especially in rural areas, can reduce unplanned deviations and promote safer birthing outcomes.

**Keywords:** Associated factors, Deviations, Spontaneous, Vaginal delivery

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## Physical Experiences of Patients with Stage III Oral Cancer during the Postoperative Period at National Dental Teaching Hospital, Sri Lanka

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**Background:** Oral cancer is a significant health concern worldwide, posing considerable challenges to patients' physical health. The post-operative period following treatment for stage III oral cancer is a critical phase that plays a pivotal role in a patient's recovery. Understanding patients' physical experiences during this period is essential to provide effective care and support that addresses their unique challenges.

**Objective:** To explore the physical experiences of patients with stage III oral cancer during the post-operative period at the National Dental Teaching Hospital of Sri Lanka

**Methods:** A qualitative descriptive study was conducted using semi-structured, in-depth and face-to-face interviews among 20 purposively selected participants who underwent surgical treatment for stage III oral cancer at the National Dental Teaching Hospital. Data were analysed using the thematic analysis method.

**Results:** Three primary themes conveyed patients' physical experiences: bodily discomforts, hurts, and adaptations. Discomforts consisted of pain, swallowing difficulty, sleep disturbances, throat irritation, and drooling. There were reports of bodily hurts to the head, neck, shoulder, throat, and surgical site. Both physical and psychological adjustments were needed to deal with body adaptations to tube feeding, speech impairment, aesthetic changes, surgical wounds, and scars.

**Conclusions:** Post-operative patients with stage III oral cancer confront a spectrum of complex and subjective physical experiences, that could be explored under three themes. For the purpose of promotion of meaningful recovery and improved quality of life, addressing these physical challenges is in need of comprehensive and multidisciplinary care that includes pre-operative education, continuous assessment, and supportive strategies.

**Keywords:** *Physical experiences, Post-operative period, Stage III oral cancer*

## Pattern of Assaults and Its Effects on the Victims Admitted to National Hospital, Galle

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**Background:** Injuries following assaults cover a wide range of physical harm, from little bumps to wounds that could be fatal. Although the injuries following assaults are a serious health and economic burden to our country, the research data on the pattern of assaults and its physical and psychological effects is scarce.

**Objectives:** To study the pattern of assaults and their physical and psychological effects among assault victims admitted to National Hospital, Galle

**Methods:** A descriptive cross-sectional study was conducted at Emergency Trauma Casualty ward and all surgical wards in National Hospital, Galle. Data were collected during one month using a self-developed interviewer-administered questionnaire. Pre-test was conducted with a separate sample (n=10) in the same setting and the questionnaire was improved according to experts' comments. Assault victims were recruited using consecutive sampling. Descriptive statistics and Chi-square test were used to analyse the data.

**Results:** A total number of 122 cases were recruited. Of the total, 54.92% of patients has significant psychological effects after injuries following assaults. Majority of the assaults have occurred in day time (63.1%) and 30.0% have occurred at home. Most of the perpetrators (29.51%) were friends and working mates followed by relatives (27.05%). The commonest injury type was scratches (27.53%) and the weapon type was blunt weapons (60.81%), while 38.33% of assaults happened without weapons. No significant associations were found among socio-demographic characteristics and physical effect, psychological effect. A strong significant association was detected among physical effect and the psychological effect ( $p < 0.05$ ).

**Conclusion:** Physical and psychological effects of injuries following assaults are not significantly influenced by the sociodemographic characteristics of the victims. However, the severity of the psychological effects is significantly associated with the severity of the physical effects experienced by the victims.

**Keywords:** Assault, Effects of the injuries, Injury patterns, Victims

## Self-care Management Practices, Lifestyle Modifications, and Associated Factors among Patients with Hypertension Attending Medical Clinics at National Hospital, Galle

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**Background:** Hypertension is a major global health concern, particularly in low and middle-income countries. Effective self-care management, including lifestyle modifications and medication adherence, plays a crucial role in controlling hypertension. Research on hypertension self-care practices in Sri Lanka is limited, highlighting the need for evidence-based strategies to improve patient outcomes.

**Objectives:** To assess self-care management practices, lifestyle modifications, and associated factors among hypertensive patients attending medical clinics at National Hospital, Galle

**Methods:** A descriptive cross-sectional study was conducted among 403 hypertensive patients selected through simple random sampling. Patients aged 18 to 90 years who had been on hypertension treatment for more than six months were included, while those with vision or hearing impairments were excluded from the study. Data were collected using a translated, pre-tested Sinhala version of the Hypertension Self-Care Activity Level Effects (H-SCALE) scale and a self-administered questionnaire assessing socio-demographic and clinical factors. Data were analysed using descriptive statistics, the Chi-square test, one-way ANOVA, and student *t*-tests in SPSS version 26.0.

**Results:** The mean±SD age of participants was 52.1±17.1 years, and 51.9% were males. Uncontrolled hypertension was observed in 75.2% of patients. Non-adherence rates were high across key self-care domains: 86.4% for medication adherence, 45.7% for physical activity, 98.1% for a low-salt diet, and 91.3% for weight management. Age ( $p=0.048$ ) and gender ( $p=0.005$ ) were significantly associated with self-care practices, with younger patients and males showing better adherence. Level of education, monthly income, duration since diagnosis of hypertension, and presence of other comorbidities such as diabetes mellitus were not significantly associated with the self-care management practices of patients with hypertension.

**Conclusions:** Poor adherence to hypertension management practices was prevalent, contributing to high rates of uncontrolled hypertension, especially among older adults. Targeted educational interventions and self-care enhancement strategies are essential to improve hypertension control and patient outcomes.

**Keywords:** *Associated factors, Hypertension, Lifestyle modification, Medication adherence, Self-care management*

## **Theme: Medical Laboratory Science**



## Impact of Absolute Lymphocyte Count on Kappa Lambda Ratio in Autologous Transplantation for IgG Myeloma

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**Background:** Multiple myeloma (MM) is a neoplastic haematological disorder characterised by clonal proliferation of malignant plasma cells. The disease becomes fatal if not treated effectively. Autologous Peripheral Blood Stem Cell Transplantation (PBSCT) is an effective therapeutic intervention at present. Although Kappa Lambda ratio (KL ratio) assessment helps the diagnosis and treatment monitoring, finding of an inexpensive Absolute Lymphocyte Count (ALC) remains valid in screening treatment outcomes.

**Objective:** To establish correlation between KL ratio and Absolute Lymphocyte Count (ALC) through statistical modeling of patients with MM (IgG Kappa type) in Pre and Post PBSCT at Apeksha Hospital, Maharagama

**Methods:** A cross-sectional study of 68 MM (IgG Kappa type) patients under 70 years was carried out. Absolute Lymphocyte Count (ALC) and KL ratios were obtained from pre-transplant and post-transplant phases. Linear regression analysis was performed to develop reliable equations to predict KL ratios from ALC for each time period using SPSS version 25.0.

**Results:** Different reliable formulas for KL ratios were derived for the time periods of pre- and post-transplant stages. Among them, the two months after transplant stage provided a strong reliable equation;  $KL\ ratio\_2\ Mon\ Aft = 1.086 \times (ALC\_2\ Mon\ Aft) - 1.056$  [ $R^2 = 0.797$ ;  $p (ALC\_2\ MonAft) < 0.001$ ;  $p (KL\_2\ MonAft) < 0.001$ ].

**Conclusions:** The present findings indicate that the KL ratio from the simple inexpensive ALC could potentially be predicted using regression equations at the two month after transpalntation. The results suggest that a simple FBC parameter could serve as a potential screening tool in the absence of the KL ratio. These early findings are promising and, should be validated by an expanded sample size before bringing them into practice.

**Keywords:** Absolute lymphocyte count, Kappa lambda ratio, Linear regression analysis, Multiple myeloma, Peripheral blood stem cell transplantation

## A Novel Approach for Antibody Level Assessment: Integrating Titre and Cumulative Grading for Improved Assessment

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**Background:** Assessing the antibody titres is an essential aspect of Immunohaematology. However, traditional methods of antibody quantification depend only on the determination of the titre; highest dilution that exhibits agglutination, which might not adequately represent the total antibody load. Cumulative grading was calculated by adding individual grading from all dilutions and it considers all reactions in the dilution series. This study proposed a derived parameter by combining titre and its corresponding cumulative grading to offer a thorough evaluation of antibody levels.

**Objectives:** To propose and derive parameters that integrate titre and its corresponding cumulative grading for a more precise measurement of IgM and IgG isotypes of anti-A and anti-B antibody levels in donors with blood group O

**Methods:** A laboratory-based, experimental, cross-sectional study was conducted involving 200 donors with blood group O, at the Department of Transfusion Medicine, University Hospital of General Sir John Kotelawala Defence University. Antibody titres (IgM and IgG anti-A and anti-B) were measured using the conventional tube method with serial two-fold dilutions, and the strength of agglutination was graded and the cumulative grading was calculated. Four parameters were proposed and derived integrating titre and cumulative grading; 'Log<sub>10</sub>(Titre)×Cumulative Grading', 'Log<sub>10</sub>(Titre)/ Cumulative Grading', 'Titre×Cumulative Grading', and 'Titre/ Cumulative Grading'. Spearman correlation analysis was conducted to examine the relationship between the antibody titre and their corresponding cumulative grading and proposed derived parameters.

**Results:** All antibody titres revealed strong positive correlations with their corresponding cumulative grading (IgM anti-A  $r_s=0.866$ ;  $p<0.01$ , IgG anti-A  $r_s=0.900$ ;  $p<0.01$ , IgM anti-B  $r_s=0.891$ ;  $p<0.01$ , IgG anti-B  $r_s=0.865$ ;  $p<0.01$ ). Among four proposed derived parameters, 'Titre ×Cumulative Grading' exhibited the highest correlation with its corresponding antibody titre for all antibody types (IgM anti-A  $r_s=0.976$ ;  $p<0.01$ , IgG anti-A  $r_s=0.987$ ;  $p<0.01$ , IgM anti-B  $r_s=0.977$ ;  $p<0.01$ , IgG anti-B  $r_s=0.984$ ;  $p<0.01$ ), establishing it as the most reliable proposed derived parameter for measuring antibody levels.

**Conclusions:** The 'Titre×Cumulative Grading' parameter better quantifies antibody levels than the titre alone by integrating the cumulative grading. Applying this in blood bank settings could improve decision-making in transfusion medicine and newborn care by identifying patients at risk of severe antibody-mediated reactions even when titres appear low or borderline.

**Keywords:** Antibody titres, Antibody titrations, Cumulative grading, IgG and IgM, Immunohaematology

## Association between Platelet Count and Serum Creatinine Levels among Patients with End Stage Kidney Disease on Regular Maintenance Hemodialysis: A Single Center Study in Sri Lanka

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**Background:** Chronic kidney disease (CKD) is a growing global health concern, which ultimately leads to end stage kidney disease (ESKD). Irreversible permanent failure of renal function defined as ESKD is characterized by the inability to maintain fluid, electrolyte and acid-base balance. Regular maintenance hemodialysis as renal replacement therapy offers survival benefits for patients with ESKD. These patients are well-known to exhibit bleeding complications as a result of qualitative and quantitative abnormalities of platelets.

**Objective:** To determine the correlation between platelet parameters and serum creatinine levels in ESKD patients undergoing hemodialysis at a tertiary care hospital, Sri Lanka

**Methods:** A descriptive cross-sectional study was conducted, enrolling 39 adult patients above 18 years with ESKD on regular maintenance hemodialysis at Sri Jayewardenepura General Hospital, Sri Lanka. Pre-dialysis blood samples were used. Laboratory values for pre-dialysis serum creatinine, platelet count (PLT), mean platelet volume (MPV), platelet distribution width (PDW), were recorded. The correlation between pre-hemodialysis platelet parameters and serum creatinine was analysed using Spearman's rank correlation test. Statistical significance was indicated by a *p*-value of <0.05.

**Results:** The male:female ratio of the sample was 31:8 with a median age of 58 years. Pre-hemodialysis PLT ( $r=-0.480$ ,  $p=0.037$ ) and PDW ( $r=-0.475$ ,  $p=0.040$ ) showed significant moderate negative correlations with pre-hemodialysis serum creatinine levels. However, pre-hemodialysis MPV did not indicate a significant correlation with pre-hemodialysis serum creatinine levels.

**Conclusions:** A negative correlation was found between pre-hemodialysis PLT and PDW with pre-hemodialysis serum creatinine levels among patients on regular maintenance hemodialysis for ESKD.

**Keywords:** End stage kidney disease, Hemodialysis, Mean platelet volume, Platelet count, Platelet distribution width

## The Association between Triglyceride-glucose Index and Glycemic Control in Women with Diabetes Mellitus Attending a Tertiary Care Hospital, Sri Lanka

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**Background:** Diabetes mellitus (DM) is a prevalent disease condition that represents significant challenges globally. The glycated haemoglobin (HbA1c) test is widely used to assess glycemic control in individuals with DM. The triglyceride-glucose index (TyG index=  $\text{Ln}[\text{fasting triglycerides (mg/dL)} \times \text{fasting glucose (mg/dL)} / 2]$ ), which is derived from fasting triglyceride and blood glucose levels (FBG), could offer a cost-effective method for monitoring glycemic control. It has the potential to serve as a tool for assessing insulin resistance and cardiovascular risk simultaneously.

**Objective:** To determine the association between TyG index and glycemic control in women with DM, attending a tertiary care hospital in Sri Lanka

**Methods:** A descriptive cross-sectional study was carried out at Colombo South Teaching Hospital, Sri Lanka, involving 343 women aged 20 to 80 years, with a confirmed diagnosis of DM for at least one year before recruitment. Biochemical tests (HbA1c, FBS, and lipid profiles) results were obtained from the biochemistry laboratory in the hospital. The HbA1c level below 7% was categorized as good glycemic control, while a level of 7% or higher indicated poor glycemic control. The Spearman's test was used to assess the correlation of TyG index with HbA1c and low-density lipoprotein cholesterol (LDL-C). Mann Whitney-U test was used to compare the difference of TyG index between good and poor glycemic control groups.

**Results:** Among the participants, 75.5% of subjects had poor glycemic control whereas 24.5% of subjects had good glycemic control. The median (Interquartile Range) values of HbA1c, TyG index and LDL-C were 8.1(2.3)%, 8.89(0.69) and 89.1(36.0) mg/dL, respectively. TyG index showed a weak but statistically significant positive correlation with HbA1c {Spearman's rho ( $\rho$ ) = 0.244,  $p < 0.001$ } and LDL-C ( $\rho = 0.214$ ,  $p < 0.001$ ). A statistically significant increase in TyG index ( $p < 0.001$ ) was observed in the poor glycemic control group [Median (IQR) - 8.95(0.65)] compared to the good glycemic control group [Median (IQR) - 8.70(0.87)].

**Conclusions:** In women with DM, a higher TyG index was linked to worse glycemic results compared to results with good glycemic control.

**Keywords:** Diabetes mellitus, Glycated haemoglobin, Glycemic control, Sri Lankan women, TyG Index

## Genotypic and Phenotypic Effect of *BTNL2* and *LTA* Genes in Sri Lankan Sarcoidosis Patients

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**Background:** Sarcoidosis is a rare chronic inflammatory disorder affecting multiple organs, including the lungs, lymph nodes, and eyes with symptoms including granulomas, dry cough, and shortness of breath. While several genes have been linked to the disease, environmental and other conditions trigger its onset.

**Objectives:** To identify genetic variants associated with Sarcoidosis by analysing Minor allele frequencies (MAF) of *BTNL2* and *LTA* gene polymorphisms and comparing them with healthy controls to correlate the symptomatic presentation and mutation zygosity of the selected genes

**Methods:** A literature review was conducted to identify relevant genetic variants linked to Sarcoidosis in the Asian population, focusing on the *NOD2* gene rs104895462 (C>T), *LTA* gene rs1041981 (C>A), *ANXA11* gene rs1049550 (G>C), and *BTNL2* gene rs2076530 (T>C). Blood samples from 22 patients were collected nationwide and genotyped using optimized Tetra-primer Amplification Refractory Mutation System (tetra-primer ARMS) and validated using Sanger sequencing followed by MAF calculation.

**Results:** Our research identified *BTNL2* and *LTA*, with a high disease prevalence in individuals aged 40-50 years, of whom 81.81% had lung granulomas. Among (n=13) individuals carrying the *LTA* variant, 30.76% were homozygous, while 69.23% were heterozygous with the mutant allele (MAF 0.4091). In contrast, all 9 individuals carrying *BTNL2* variants were heterozygous for the mutant allele (MAF 0.2045). The previously reported MAF of *BTNL2* is 0.3989 and *LTA* is 0.36. Our findings strongly associate these genes and sarcoidosis in patients with Sarcoidosis in Sri Lanka, consistent with other Asian studies. Further, *BTNL2* modulate T-cell proliferation, while *LTA* regulates tumor necrosis factor collectively promoting granuloma formation via single nucleotide polymorphisms.

**Conclusions:** This study successfully optimized tetra-primer ARMS PCR for the selected genes and reinforced the genetic basis of Sarcoidosis by analyzing MAF, followed by supporting the involvement of the *BTNL2* and *LTA* genes in observed clinical features.

**Keywords:** Gene variants, *BTNL2*, Granuloma, *LTA*, Single nucleotide polymorphism, Sarcoidosis, Tetra ARMS PCR

## Prevalence and Severity of Anaemia across Different Chronic Kidney Disease Stages among Chronic Kidney Disease Patients at Teaching Hospital, Jaffna

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**Background:** Anaemia and Chronic Kidney Disease (CKD) are linked to global health challenges. Awareness of anaemia in CKD patients is essential to optimising patient care. However, it remains unknown in selected CKD patients.

**Objectives:** To assess the prevalence and anaemia severity across the CKD stages among patients attending the Nephrology and Medical clinics at Teaching Hospital, Jaffna

**Methods:** This descriptive cross-sectional study was conducted using convenient sampling technique. A total of 137 patients (18 years or more) diagnosed with CKD were recruited and categorized into five CKD stages based on estimated glomerular filtration rate (eGFR). Patients on dialysis, with kidney transplant or erythropoietin therapy were excluded. Serum creatinine and blood haemoglobin concentrations were measured by Jaffe and cyanmethemoglobin methods, respectively. Anaemia and its severity were defined according to the WHO criteria. Patients' age and gender were entered into a data extraction sheet. Data were analysed using descriptive statistics in SPSS software.

**Results:** In the selected population, 48.18% (n=66) were anaemic and equally distributed (n=33) between males and females. The mean±SD age of anaemic patients was 51.24±14.59 years. The highest proportion of anaemic patients (13.9%) was observed in stage 3b, followed by stage 4 (12.4%) and stage 2 (10.2%), showing statistical significance ( $p<0.001$ ). Anaemia was more frequent in females at early CKD stages, while in advanced stages, anaemia was predominantly observed in males. Mild anaemics (63.6%) were highest, followed by moderate (33.3%) and severe (3%) anaemics. Mild anaemia was predominated in males (54.8%), whereas moderate anaemia was more prevalent in females (54.5%). Only females had severe anaemia. Mild anaemia was the most frequent form observed across all CKD stages. Moderate anaemia (22.7%) was distributed evenly between patients in stages 2 and 3b. Severe anaemia was observed only in the patients at stage 4. However, the severity of anaemia was not significantly associated with CKD stages.

**Conclusions:** Anaemia was prevalent in nearly half of the CKD patients, with mild anaemia being the most common across all stages and severe anaemia observed only in advanced stages. Although anaemia prevalence increased significantly with CKD progression, no significant association was found between anaemia severity and CKD stages in selected CKD patients.

**Keywords:** Anaemia, Chronic kidney disease, CKD stages, Severity of anemia

## Bacterial Pathogens and Antimicrobial Susceptibility in Paediatric Urinary Tract Infections at Teaching Hospital Jaffna

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**Background:** Urinary tract infections (UTIs) are a significant health concern among children. Which may result in renal injury later. Assessing the type of pathogens and their Antibiotic Susceptibility Test (ABST) patterns locally is crucial for the effective treatment of UTIs.

**Objective:** To assess the prevalence and ABST patterns of bacterial pathogens in UTI suspected pediatric patients at the outpatient department of Teaching Hospital Jaffna

**Methods:** A descriptive cross-sectional study was conducted from May-July, 2024, using convenience sampling. Clean-catch midstream urine samples were collected from UTI suspected pediatric patients. Significant bacterial growth (SBG) was defined as growth of a single organism at  $>10^4$  CFU/mL on cysteine lactose electrolyte-deficient agar, with pyuria ( $>1$  pus cell/7 high-power field) as supporting evidence. Isolates were identified biochemically, and ABST was performed using CLSI disk diffusion method. Extended-Spectrum Beta-Lactamase (ESBL) detection employed the keyhole synergy test with cefotaxime, ceftazidime, and amoxicillin-clavulanic acid discs, while Methicillin-Resistant *Staphylococcus aureus* (MRSA) was identified via cefoxitin disk diffusion. Descriptive statistics were done with SPSS version 20.0.

**Results:** Among the 156 pediatric patients suspected of having UTIs, 101 were female, mean $\pm$ SD age was 6.3 $\pm$ 3.5 years. The SBG was found in 10.9% of samples (76.5% female), primarily coliforms (*Escherichia coli* 35.3%, *Klebsiella* species 23.5%). Norfloxacin, gentamicin, cotrimoxazole, and nitrofurantoin were identified as highly effective first-line antibiotics. Coliforms showed high resistance to cefotaxime (80%) and ampicillin (70%), with moderate resistance to nalidixic acid and co-amoxiclav (50% each), with 20% being ESBL producers. *Enterococcus* and other *Streptococcus* species were sensitive to most empirical antibiotics, however isolated *Staphylococcus aureus* (5.9%) was identified as MRSA.

**Conclusion:** *Escherichia coli* was the most common isolate among pediatric UTI suspected cases. Isolated pathogens showed high resistance to commonly used antibiotics.

**Keywords:** Extended-spectrum Beta-lactamase, Methicillin-resistant *Staphylococcus aureus*, Urinary tract infections



## Molecular Detection and Antibiotic Sensitivity Patterns in Methicillin Resistance *Staphylococcus aureus* Colonizing Pregnant Women in Eastern Province, Sri Lanka

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**Background:** *Staphylococcus aureus* and methicillin-resistant *Staphylococcus aureus* (MRSA) are pathogens capable of causing a wide range of infections, from localized issues to life-threatening sepsis. In Sri Lanka, data on MRSA colonization among pregnant women are limited, with most existing studies focusing on hospital-acquired infections or non-pregnant populations.

**Objectives:** To determine the MRSA colonisation rate in pregnant women admitted for delivery with a gestational age of more than 35 weeks, and to describe their antibiotic sensitivity patterns and the presence of the *mecA* gene

**Methods:** This descriptive cross-sectional study involved 235 pregnant women admitted for delivery at the Teaching Hospital, Batticaloa, in the Eastern Province, Sri Lanka, from May to August 2023. Swabs were collected from the nasal, rectal, and vaginal sites of each participant. *Staphylococcus aureus* and MRSA strains were identified using routine microbiological methods and disc-diffusion antibiotic sensitivity testing (ABST). Vancomycin minimum inhibitory concentration (MIC) was determined for all MRSA isolates. PCR was performed to detect the *mecA* gene in phenotypically identified MRSA isolates with a zone diameter of  $\leq 21$  mm. Statistical analysis was conducted using SPSS version 27.0.

**Results:** Out of 235 pregnant women, 36 (15.32%) were colonized with *Staphylococcus aureus*. Among them, 9 (3.83%) showed colonisation only in the nasal mucosa, 24 (10.21%) in the recto-vaginal mucosa, and 3 (1.28%) at both sites. A total of 36 MRSA isolates were identified from 33 pregnant women. From the nasal and recto-vaginal sites, 12 (5.11%) and 24 (10.21%) MRSA isolates were identified, respectively. Therefore, the MRSA colonisation rate was 14.04% (95% CI: 9.61%-18.47%). Antibiotic sensitivity patterns for MRSA were as follows: clindamycin (69.44%), ciprofloxacin (88.89%), co-trimoxazole (86.11%), tetracycline (94.44%), and erythromycin (2.78%). All 36 MRSA isolates (100%) were sensitive to vancomycin ( $\leq 2$  µg/mL). PCR revealed that 34 out of 36 (94.44%) MRSA isolates had the *mecA* gene.

**Conclusion:** This study found a notably high MRSA colonization rate of 14.04%. These findings highlight the need for colonisation control strategies and regular MRSA screening in maternity wards, as the detected rate is considerably higher than previously reported levels.

**Keywords:** Antibiotic sensitivity, *MecA* gene, MRSA colonisation, Pregnant women



## Evaluation of Aldosterone-to-renin Ratio Among Hypertensive Patients at the National Hospital Galle

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**Background:** Hypertension among young adults (18-42 years) is an emerging global public health concern. The Aldosterone-to-renin ratio (ARR) is a biochemical test used to identify inappropriate aldosterone activity and screen for primary aldosteronism (PA). It is recommended for patients with hypertension, adrenal nodules, or those unresponsive to standard hypertensive medications.

**Objectives:** To estimate the prevalence and causes of raised ARR, to determine the prevalence of young hypertension (18-42 years) among ARR tested patients, to estimate the prevalence of primary aldosteronism in patients with elevated ARR who undergo further investigations and to determine the association of serum Na<sup>+</sup>, K<sup>+</sup> levels with raised ARR (>3.7) and normal groups

**Methods:** A cross-sectional retrospective study was conducted among 300 ARR-tested hypertensive patients (aged>18 years) who attended medical clinics, endocrine clinic, and chemical pathology laboratory at National Hospital Galle. Data were collected using convenient sampling method. Records of patients with psychiatric illnesses, pregnant women and patients aged> 60 years were excluded. ARR cut-off  $\geq 3.7$  was considered as elevated. Clinic records of ARR tested patients were screened for clinic details, blood pressure, endocrine disorders, other medical history, and demographic information. Results were analysed using SPSS version 21.0.

**Results:** In this study group 18.3% (55/300) ARR-tested hypertensive patients had raised ARR (>3.7). Furthermore, 49.3% (148/300) of the study sample were young hypertensive patients (18-42 years). It was observed that young hypertension is common in males, 64.19% (95/148) than in females, 35.81% (53/148). Among raised ARR patients, 34.54% (19/55) were diagnosed with PA. Furthermore, essential hypertension [25.45%, (14/55)], renal impairments (mostly CKD) [20%, (11/55)], renal artery occlusion [9%, (5/55)] were identified as other causes for raised ARR. The mean $\pm$ SD values of serum Na<sup>+</sup> and K<sup>+</sup> levels among normal subjects (245/300) were 140.52 $\pm$ 17.77 and 4.00 $\pm$ 0.28 mmol/L, respectively. The mean $\pm$ SD values for serum Na<sup>+</sup> and K<sup>+</sup> levels among raised ARR subjects (55/300) were 139.24 $\pm$ 2.41 and 3.74 $\pm$ 0.31 mmol/L, respectively. There was no significant difference between mean Na<sup>+</sup> ( $p=0.258$ ) and K<sup>+</sup> ( $p=0.512$ ) levels among ARR normal and raised groups.

**Conclusions:** There is a 18.3% prevalence of raised ARR in ARR tested population and study identifies PA as the most common cause for raised ARR. Furthermore, this study shows a 49.3% prevalence of hypertension in young adult, majority being males which seems alarming. However, it is better to expand the study with a wider sample.

**Keywords:** Aldosterone-to-renin ratio, Primary Aldosteronism, Young hypertension

## **Theme: Public Health**

## Social Media and Adolescent Mental Wellbeing: Investigating the Impact of Online Connectivity on Psychological Health

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**Background:** The growing use of social media among adolescents has raised concerns about its impact on mental well-being. In Sri Lanka, where digital connectivity is expanding rapidly among youth, understanding the psychological effects of online engagement is crucial. Although social media offers opportunities for connection and support, excessive or unregulated use is linked to anxiety, depression, and sleep disturbances.

**Objective:** To explore the relationship between social media usage patterns and psychological well-being among adolescents, aged 10-19 years

**Methods:** A cross-sectional, quantitative study was conducted among 120 adolescents from selected secondary schools using convenience sampling. Participants completed a validated, self-administered questionnaire assessing social media usage, screen time, and psychological wellbeing (using the WHO-5 Well-Being Index). Data were analysed using descriptive statistics and Pearson correlation using SPSS version 26.0.

**Results:** Data from 120 adolescents were analysed. The mean $\pm$ SD age of the participants was 16.1 $\pm$ 1.2 years, and 65% were females. The mean $\pm$ SD of the daily screen time on social media was 4.5 $\pm$ 1.3 hours. Approximately 52% reported frequent feelings of anxiety or low mood. A significant negative correlation was observed between time spent on social media and WHO-5 well-being scores ( $r=-0.41$ ,  $p<0.01$ ), indicating that increased usage was associated with lower psychological wellbeing. Pearson correlation also revealed that nighttime usage was significantly correlated with poorer sleep quality ( $r=-0.37$ ,  $p<0.01$ ) and higher emotional distress ( $r=0.39$ ,  $p<0.01$ ).

**Conclusion:** Excessive social media usage is associated with reduced psychological wellbeing among adolescents. The findings underscore the importance of digital literacy education and mental health promotion in schools to foster healthier online habits.

**Keywords:** *Adolescents, Psychological well-being, Social media, Screen time, Sleep quality*

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## Awareness of Rabies, Practices for Vaccination and Reducing Pet Population among Pet Owners in Minuwangoda Medical Officer of Health Area

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**Background:** Rabies is a serious zoonotic disease caused by a virus and is incurable, once symptoms develop in humans. Although dogs are the main reservoirs of the virus, pet owners can significantly help prevent human rabies by ensuring their pets are properly vaccinated.

**Objectives:** To assess the awareness of rabies, practices and barriers for vaccination and reducing pet population among pet owners in Minuwangoda Medical Officer of Health (MOH) area in Gampaha District, Sri Lanka

**Methods:** A descriptive cross-sectional study was conducted among 280 pet owners selected through consecutive and convenience sampling. Data on socio-demographics, rabies awareness, vaccination practices and barriers, and pet population control were collected using a pre-tested, validated, structured questionnaire from selected households. Data were analysed using SPSS version 26.0.

**Results:** Of the participants, 57.5% were female, and 42.9% were educated up to advanced level. Almost all participants (97.1%) had heard about rabies, but only 52.1% knew that rabies is caused by a virus. Most (43.6%, n=122) of the participants knew that rabies cannot be cured once pets get infected but some (39.6%, n=111) believed that rabies can be treated successfully after symptoms appear on humans emphasizing the lack of health education. Overall, 46.1% had poor awareness regarding rabies as a transmissible and a fatal disease. In addition, 85% had vaccinated their pets and also 87.1% believed that rabies can be prevented by vaccination. Further, 61.8% mentioned sterilization as the most effective method for dog control but 36.4% were unwilling to sterilize their pets, 10.7% stated that the long distance to the vaccination site as a main barrier for vaccination.

**Conclusions:** This study revealed that most respondents had poor knowledge on rabies as a fatal and transmissible disease, and many believed it could be cured after humans get infected. Although most participants vaccinated their pets, many were reluctant to sterilize them.

**Keywords:** Awareness, Practices, Rabies, Sterilization, Vaccination

## **The Impact of Celebrity Culture on Social Media Engagement, Lifestyle Behaviours, and Academic Interference among Health Sciences Undergraduates at a Private Sri Lankan University**

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**Background:** Celebrity culture, amplified through social media platforms, has the potential to shape young adults' fashion choices, body image perceptions, career aspirations, and social interactions. Despite its pervasive influence globally, there is a paucity of empirical research exploring how these dynamics operate within Sri Lankan higher-education context.

**Objective:** To evaluate the extent to which celebrity culture affects social media engagement, lifestyle behaviours, and academic interference among undergraduates

**Methods:** A descriptive cross-sectional study was administered to a randomly selected 87 students. The mean±SD age of the participants was 20.4±1.2 years. Of the sample 62% were females. Participants completed a pre-tested and validated self-administered questionnaire that assessed levels of celebrity attraction, perceived influence (categorised as positive, negative, mixed, or neutral), frequency of social media usage, degree of academic interference, and specific lifestyle behaviours modelled on celebrities (including fashion, hairstyles, brand adoption, and participation in social media challenges). Data were analysed descriptively using SPSS version 28.0.

**Results:** The findings revealed that the majority of students experienced mixed positive (57.5%) and negative (42.5%) influences from celebrities, while 28.7% reported predominantly positive effects, 2.3% predominantly negative effects, and 11.5% neutral impact. Celebrity attraction varied, with 16.1% indicating high attraction, 33.3% moderate attraction, 27.6% low attraction, and 22.9% no attraction. Nearly nine in ten students engaged with celebrity content 'quite often' or 'very often', and 33.3% acknowledged moderate academic interference attributable to celebrity-related social media usage, with 18.4% reported minor interference and 48.3% reported no interference. Lifestyle behaviours influenced by celebrities included the adoption of endorsed brands (44.8%), participation in social media challenges (36.8%), imitation of fashion styles (24.1%), and adoption of celebrity hairstyles (21.8%).

**Conclusion:** Celebrity culture exerts a substantial influence on Sri Lankan health sciences undergraduates' social media engagement and lifestyle choices, and approximately one-third of students report moderate level of academic interference. Incorporating media literacy and critical-thinking modules into university curricula may equip students to critically evaluate and navigate celebrity-driven content, thereby reducing potential negative impacts on academic performance and wellbeing.

**Keywords:** *Academic interference, Celebrity culture, Lifestyle behaviour, Media literacy, Social media engagement*

## An Assessment of Knowledge and Practices of Mothers on Early Childhood Developmental Milestones in Selected MOH Areas of Galle District

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**Background:** Early childhood represents a pivotal developmental period for children. In most societies, mothers assume primary childcare responsibilities thus, their comprehension of developmental milestones significantly influences the quality of care provided.

**Objectives:** To assess the knowledge and practices on early childhood developmental milestones among mothers of children below five years in selected Medical Officer of Health (MOH) areas in Galle district

**Methods:** A descriptive cross-sectional study was conducted among 311 mothers by multistage systematic random sampling in Galle and Bope-Poddala MOH clinic setting using a self-developed, pre-tested and self-administered questionnaire, adopted from the Knowledge of Infant Development Inventory and Child Health Development Record (CHDR). Statistical analysis was carried out using SPSS version 25.0 and presented as frequency distributions and percentages.

**Results:** About 51.4% mothers were aged between 21-30 years and, 55.6% have educated above G.C.E. Ordinary Level Examination. About 50.2% mothers had 'good' overall knowledge on developmental milestones. Of the sample 71.1% had 'excellent' knowledge in the physical domain. The majority had 'fair' knowledge in the socio-emotional (74.6%) and language domains (74.3%). Of the sample, 60.8% exhibited 'good' overall practices. In the physical domain (40.2%) and socio-emotional domain (44.1%), mothers exhibited 'excellent' practices. Of the total 38.3% had 'fair' practices in the language domain. The 'poor' score for both knowledge (32.5%) and practices (43.7%) were obtained for the cognitive domain. Only 34.7% had 'excellent' hearing practices and 28.6% had 'excellent' vision practices. About 69.8% of mothers marked the milestone assessment section within the CHDR. Regarding vision and hearing sections, most were always observed, followed (vision: 56%, hearing: 60.5%) and documented (vision: 42.4%, hearing: 43.7%) CHDR. Maternal knowledge and practices were positively correlated with the education (knowledge:  $r=0.17$ , practice:  $r=0.003$ ), and monthly income affected only on practices ( $r=0.125$ ).

**Conclusions:** The average of mothers has sufficient knowledge and practices on development milestones, except the cognitive domain. Comprehensive health education programs favor on underestimated domains.

**Keywords:** *Child health development record, Developmental milestones, Mothers' knowledge and practice*

## Dietary Habits and Its Associated Factors among Adults Attending a Selected Primary Medical Care Unit in Sri Lanka

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**Background:** Dietary habits among adults are influenced by a wide range of factors, including individual, environmental, cultural, and socioeconomic determinants. These factors need to be understood in order to encourage healthy food habits and avoid diet-related disorders such as obesity, diabetes, cardiovascular diseases, and malnutrition.

**Objectives:** To identify the dietary habits and its associated factors among adults attending a selected primary medical care unit (PMCU) in Rathnapura District Sri Lanka

**Methods:** A descriptive cross-sectional study was conducted among 186 adults (above 19 years of age) who attended the PMCU of Yaya 02, Ratnapura District, Sri Lanka. Convenient sampling was used to select the participants. An interviewer-administered questionnaire was used to obtain the data, including demographic data, anthropometric data (weight, height, BMI, waist circumference), and dietary habits (carbohydrate, fat, sugar intake, meal skipping). Data were analysed using SPSS version 26.0, using both descriptive and inferential statistical tests including the Chi-square test, independent sample t-test, and correlational analysis ( $p < 0.05$ ).

**Results:** The sample consisted of 25.8% males ( $n=48$ ) and 74.2% females ( $n=138$ ), the majority (53.2%) aged 40–65 years. For medical history, 35.5% were diagnosed with diabetes mellitus, 21% had heart diseases, 46.8% had dyslipidemia, and 21% had hypertension. Their mean $\pm$ SD BMI was  $24.59 \pm 4.54$  kg/m<sup>2</sup>, and the mean $\pm$ SD waist circumference was  $84.2 \pm 10.1$  cm. For dietary habits, 47.8% had high-carbohydrate meals, 21.5% had a high-fat diet, and 12.3% had high-sugar intake. Additionally, 14% skipped breakfast and 8.1% skipped lunch and dinner. Statistical analysis showed gender and BMI had a significant association ( $p < 0.05$ ) but not with the rest of the demographic factors and dietary practices.

**Conclusions:** The study identifies that gender was significantly associated with BMI. Females had a higher BMI than males. Unhealthy dietary habits, including high carbohydrate and fat intake, were prevalent among the participants. The findings emphasise the need for targeted nutritional interventions and public health programs promoting healthy dietary habits among adults in the selected PMCU.

**Keywords:** BMI, Dietary habits, Nutritional status, Public health

## Knowledge, Hygiene Practices, and Factors Associated with Menstrual Hygiene among Adolescent School Girls in Galle, Sri Lanka

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**Background:** Globally, poor menstrual hygiene management remains a significant challenge, particularly in low- and middle-income countries. Studies estimate that at least 500 million women and girls lack access to adequate menstrual hygiene facilities. Further, menstrual hygiene plays a crucial role in the lives of adolescent girls by impacting their ability to participate in academic and extracurricular activities.

**Objectives:** To assess the knowledge and hygiene practices on menstruation, and associated factors for knowledge on menstruation and menstrual hygiene practices among grade 9-10 school girls in Galle educational division

**Methods:** A descriptive cross-sectional study was conducted with the participation of 389 girls in Galle educational division using the multi-stage cluster sampling method. A validated, modified, self-administered questionnaire including socio-demographic information, general facts about menstruation, knowledge about menstruation and its' hygiene, practices regarding menstrual hygiene was used to collect data. Descriptive statistics, Chi-square test, independent sample *t*-test, one-way ANOVA were used to analyse the data.

**Results:** Among the participants, only 37.2% (n=125) had satisfactory knowledge on menstruation and only 17.3% (n=66) had a satisfactory level of practices on menstrual hygiene. 50.5% (n=193) participants used both sanitary and cloth napkins. 28.8% (n=110) change sanitary napkins more than 3 times per day for the first two days of menstruation. Among the participants 86.9% (n=332) washed genitalia with soap and water with every change of sanitary napkins. Knowledge of menstruation was associated with menstrual hygiene practices ( $p=0.015$ ), information received from the media ( $p=0.010$ ), experience on menstruation ( $p=0.025$ ), mother's level of education ( $p<0.001$ ) and father's level of education ( $p<0.001$ ). 76.7% (n= 293) were from nuclear families and the hygiene practices on menstruation were associated with the type of the family ( $p=0.023$ ).

**Conclusion:** The participants' overall knowledge of menstruation and menstrual hygiene practices were poor. Key factors influencing menstrual hygiene included parents' level of education, family structure, and prior experience with menstruation.

**Keywords:** Associated factors, Hygiene practices, Knowledge on menstruation



## Involvement of Spouses of Pregnant Mothers for Community-based Antenatal Sessions Conducted at Selected Medical Officer of Health Areas in Galle District

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**Background:** Antenatal care (ANC) involves systematic, routine assessment, care provision and health promotion for pregnant women to ensure optimal health outcomes. Involving male companions in antenatal sessions (ANS) are aimed at optimising family support and care for the mother and the child. The majority of men do not participate in ANC, highlighting the need to evaluate their participation, factors influencing their involvement, and obstacles preventing their utilisation of ANC.

**Objectives:** To determine the prevalence of male involvement in ANS, their characteristics and associated factors to the community based ANS in Bope-Poddala and Galle MOH areas

**Methods:** A descriptive cross-sectional study was conducted among 219 couples with a pregnant mother attended to ANS at Bope-Poddala and Galle MOH areas. Data collection was carried out between January and February 2024 using convenient sampling via validated, pre-tested, self-administered questionnaires from pregnant women and their spouses who attended and interviewer-administered questionnaires from male spouses who did not attend to ANS. The data were analysed with Chi-square test and Pearson correlation using SPSS version 26.0.

**Results:** About 28.8% (n=63) spouses attended the ANS. Most of male spouses 46% (n=29) who attended the ANS were educated up to Advanced Level and the 34.9% (n=22) have income between 31000-50000 LKR. Comparatively most of male spouses 48.1% (n=75) who did not attend the ANS were educated up to Ordinary Level and the 41.7% (n=65) have income between 10000-30000 LKR. Age ( $p=0.01$ ), ethnicity ( $p=0.01$ ), educational level ( $p=0.03$ ), monthly income ( $p<0.01$ ), mode of transportation ( $p<0.01$ ), number of children ( $p=0.04$ ), number of expectant children ( $p=0.01$ ), satisfaction about ANC of male spouses ( $p<0.01$ ) and pregnant mothers ( $p<0.01$ ) were significantly associated with the involvement of male spouses for ANS.

**Conclusion:** The male involvement in ANS of Bope-Poddala and Galle MOH areas was considerably low. The findings highlighted the need for health promotion programs to uplift the educational level, conduct ANS via online platform and making new policies to minimise disruptions during leave from work and empower the male involvement in ANS.

**Keywords:** *Antenatal sessions, Community involvement, Male spouses, Pregnant mothers*

## Knowledge and Self-care Practices on Prevention of Chronic Kidney Disease among Diabetes Mellitus Patients Attending Diabetic Clinics of Selected Base Hospitals in Colombo District, Sri Lanka

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**Background:** Chronic Kidney Disease (CKD) is a progressive condition marked by the gradual loss of kidney function and is a major global public health concern. Diabetes Mellitus is one of the leading causes, as prolonged hyperglycaemia can damage renal blood vessels, impair filtration and lead to kidney dysfunction. In Sri Lanka, the rising prevalence of CKD among diabetic patients is largely due to limited awareness and inadequate self-care practices.

**Objectives:** To assess the knowledge and self-care practices related to the prevention of CKD among patients with Diabetes Mellitus attending diabetic clinics at selected base hospitals in the Colombo District, Sri Lanka

**Methods:** A descriptive cross-sectional study was conducted among 423 diabetic patients from three base hospitals at Homagama, Mulleriyawa, and Awissawella. Participants were selected using systematic random sampling. Data were collected using a validated, pre-tested interviewer-administered questionnaire assessing knowledge and practices regarding CKD, including awareness, treatment options, the importance of exercise, diabetic diet, daily water intake, and clinic attendance. Data were analysed using SPSS version 27.0 with both descriptive and inferential statistics.

**Results:** Knowledge and self-care practice scores were calculated separately and converted into percentages. A cut-off score of 50% was used to determine adequacy, where scores above this threshold indicated adequate knowledge or good self-care practices. While 78.6% of participants demonstrated adequate knowledge of CKD prevention, only 47.2% exhibited good self-care practices, highlighting a significant gap between knowledge and its practical application.

**Conclusions:** There is a critical need to implement interventions that enhance not only knowledge but also the adoption of effective self-care behaviours among diabetic patients in the community. Further studies are recommended to explore factors influencing self-care practices to support more targeted and sustainable prevention strategies.

**Keywords:** *Chronic kidney disease, Diabetes mellitus, Knowledge, Self-care practices*

## Knowledge and Practices Regarding the Usage of Disposable Baby Diapers among Mothers in Galle District, Sri Lanka

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**Background:** Using disposable baby diapers is a common practice among mothers. However, improper use or inadequate knowledge about disposable diapers can lead to significant health issues for babies, such as diaper dermatitis, and exposure to harmful toxins.

**Objectives:** To assess the knowledge and practices on the usage of disposable baby diapers among mothers with children under five-years-old in Galle District, Sri Lanka

**Methods:** A cross-sectional study was conducted among 290 mothers selected through systematic random sampling in selected maternal and child health (MCH) clinics located in the Galle district, Sri Lanka. Data were collected using a pre-tested, investigator-administered questionnaire. Data were analysed using SPSS version 26.0, with descriptive statistics, independent sample *t*-test and one-way ANOVA.

**Results:** Among the 290 participants, 36.6% were aged 25-30 years and 37.6% had completed education up to Advanced Level. Of the sample 71% were housewives and 89% of participants had a monthly income above 25,000 LKR. About 53.8% used disposable diapers for their children under one year of age and 77.9% primarily used them for convenience while traveling. In addition, 33.8% used only one diaper per day. Of the total, 85.9% relied on social media for information regarding disposable diapers. Moreover, 96.9% demonstrated a high level of knowledge concerning diaper usage. The study revealed improper practices; 17.2% never check expiry date, 7.9% did not change a soiled diaper for over three hours. 43% did not use barrier cream or ointment to prevent diaper rash. Statistically significant associations were found between the level of knowledge and age ( $p<0.01$ ), educational background ( $p<0.001$ ), and occupation ( $p<0.01$ ).

**Conclusions:** Although the majority of mothers demonstrated adequate knowledge regarding the use of disposable diapers, the study revealed several improper practices. Therefore, targeted health awareness sessions on proper diapering practices are recommended to safeguard the health and wellbeing of babies.

**Keywords:** *Disposable baby diapers, Knowledge of mothers, Practices, Usage*

## Prevalence of Zoonotic Parasitic Infections among Domestic Pets and Awareness of Pet Owners: A Clinic-based Study in Matara

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**Background:** Zoonotic parasitic infections (ZPI) are parasitic diseases that are transmitted from animals to humans. Canine dirofilariasis caused by *Dirofilaria repens* and leishmaniasis caused by *Leishmania donovani* are vector-borne ZPI with significant human health implications in Sri Lanka. Pet owners' awareness is crucial in disease prevention.

**Objectives:** To assess the prevalence of dirofilariasis and leishmaniasis in household pets and to evaluate pet owners' knowledge and awareness of ZPI in Matara

**Methods:** Blood samples (n=49) were randomly collected from dogs presented to selected pet clinics in Matara. Giemsa-stained thick blood smears were examined for *D. repens* microfilariae, and Giemsa-stained thin blood smears for *Leishmania* amastigotes. The rk39 rapid immunochromatographic test was used to detect antibodies against the rk39 antigen of *L. donovani*. ZPI awareness was assessed using a standardised questionnaire. Data were analysed using SPSS version 21.0.

**Results:** Among 49 dogs, one (2.04%) was positive for *D. repens* microfilariae, and three (6.12%) tested positive for rk39 antibodies, while none had *Leishmania* amastigotes. The prevalences of dirofilariasis and leishmaniasis among domestic dogs were 2.04% and 6.12%, respectively. Of pet owners, 79.6% were aware that pet diseases could be transmitted to humans, with significantly higher awareness (92%) in the 31-60 age group ( $p<0.05$ ). However, 94% of pet owners were unaware of symptoms and preventive measures of common zoonotic diseases. Only 53.1% had received information on ZPI from veterinarians or reliable sources.

**Conclusions:** The low prevalence of canine dirofilariasis in this study sample may be due to the regular deworming of domestic pets compared to strays. The higher leishmaniasis prevalence suggests that dogs may act as reservoir hosts, posing a challenge for leishmaniasis transmission and control in Sri Lanka. Public awareness of ZPI, its transmission and prevention must be improved to enhance early detection and management, ultimately reducing reservoirs and limiting human transmission.

**Keywords:** *Dirofilariasis, Knowledge of pet owners, Leishmaniasis, Zoonotic parasitic infection*

## Role of Dietary Patterns and Central Obesity on Lumbar Disc Herniation

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**Background:** Lumbar disc herniation (LDH) is a leading cause of lower back pain, affecting the quality of life and work productivity. Various factors, including mechanical strain, genetic predisposition, and metabolic disorders, contribute to LDH. Recent research highlights the potential role of dietary habits in the progression of LDH. Central obesity is characterised by increased waist circumference (WC) and increased waist-to-hip ratio (WHR), which may exacerbate spinal stress and inflammation, increasing the risk for LDH.

**Objectives:** To examine the role of dietary patterns and the association of central obesity on LDH

**Methods:** A structured, interviewer-administered questionnaire assessed the dietary patterns, WC, and WHR of 18 individuals undergoing lumbar microdiscectomy for LDH in a selected hospital in Colombo. Consumption frequency of different food categories was recorded. Frequency consumption of different food was categorized depending on the number of times it was consumed compared to the recommended levels. WC and hip circumference were recorded and WHR was calculated for each individual and compared with the ranges. WC  $\geq 90$  cm for males and  $\geq 80$  cm for females, according to the overweight and obesity guideline (Sri Lanka) and WHR  $>0.90$  for males and  $>0.85$  for females, according to WHO, were considered obese. Categorical variables were presented as absolute frequencies and percentages, using SPSS version 21.0.

**Results:** Of the study population  $n=6$  (33.3%) were females and 66.6% were males with a mean  $\pm$  SD age of  $38.3 \pm 13.6$  years. Most participants ( $n=10$ ) favored home-cooked meals for every meal of the day. Rare consumption ( $<2$  meals per week) was observed for quick-service restaurant (QSR) food ( $n=11$ ) and restaurant food ( $n=9$ ). Processed foods was consumed rarely with daily sugary food consumption was reported in  $n=4$ . Rice was a staple for 50% of the population. Moderate consumption of meat ( $n=7$ ) and fish ( $n=11$ ) were observed. Low intake of fruits ( $n=12$ ;  $<5$  times per week) and dairy ( $n=16$ ; 1-2 cups per week) was noted. Daily water consumption mainly fell below the recommended levels, 2.5-3.7 liters per day, for  $n=11$ . Anthropometric analysis revealed increased WC in 66.7% of females and 50% of males, with elevated WHR in 50% of both genders.

**Conclusion:** Findings indicate a low daily water consumption in the subjects. The observed higher percentage of central obesity highlights its potential role as a contributing factor in LDH.

**Keywords:** Central obesity, Dietary habits, Lumbar disc herniation, Waist circumference, Waist-to-hip ratio

## Respiratory Symptoms and Factors Influencing Respiratory Health among Bus Drivers and Conductors in Selected Depots of Sri Lanka Transport Board, Colombo District

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**Background:** Traffic-related air pollution (TRAP) significantly impacts human respiratory health. Bus drivers and conductors are among the groups that are highly exposed to TRAP daily.

**Objective:** To assess respiratory symptoms and factors affecting the respiratory health of bus drivers and conductors in selected depots of Sri Lanka Transport Board in Colombo District

**Methods:** A cross-sectional study was conducted among a total of 262 bus drivers and conductors from Avissawella, Homagama, Kesbewa, and Maharagama depots. Respiratory symptoms were assessed using the British Medical Research Council's (BMRC) questionnaire on respiratory symptoms. Each participant was given a respiratory symptom score using the BMRC questionnaire, with higher scores indicating higher morbidity. Work-related factors; i.e. years of experience, shift duration, travel distance, work schedules, and resting time were collected using a pre-tested interviewer-administered questionnaire. SPSS version 25.0 was used to analyse data, and  $p < 0.05$  was considered statistically significant.

**Results:** The mean $\pm$ SD age of the sample was  $46.2 \pm 7.4$  years. According to BMRC questionnaire, phlegm (64%,  $n=168$ ) was identified as the most common respiratory symptom, followed by breathlessness (51%,  $n=134$ ). A total of 88% ( $n=230$ ) reported having at least one symptom, and 60% ( $n=157$ ) reported having severe, persistent respiratory symptoms. Respiratory symptom scores increased significantly with increased years of experience ( $r=0.75$ ), longer shifts ( $r=0.93$ ), and less rest ( $r=-0.49$ ) ( $p < 0.05$ ). Participants on day duty shifts had higher BMRC respiratory symptom scores than those on night shifts ( $5.02 \pm 3.2$  vs.  $4.01 \pm 3.0$ ,  $p < 0.05$ ). Long-distance travellers showed significantly higher BMRC respiratory symptom scores than short-distance travellers ( $7.62 \pm 3.0$  vs.  $3.22 \pm 2.1$ ,  $p < 0.05$ ).

**Conclusions:** Bus drivers and conductors showed more respiratory symptoms, stressing the need for regular screening and better work conditions. Limitations include considering air pollution and other confounders, limited generalizability, non-specificity and self-report bias of BMRC questionnaire.

**Keywords:** BMRC questionnaire, Bus conductors, Bus drivers, Respiratory symptoms, Traffic-related air pollution

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## **Theme: Physiotherapy**

## Knowledge Attitudes, and Practices on Pre-hospital Handling of Victims with Suspected Traumatic Spinal Cord Injuries among Public Transport Drivers in Colombo District, Sri Lanka

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**Background:** Globally, trauma-related injuries result in five million deaths annually, while spinal cord injuries (SCI) account for 10%. Pre-hospital handling plays a crucial role in SCI management. Public transport drivers frequently serve as first responders due to their accessibility, with a lack of adequate training and resources for effective pre-hospital handling.

**Objective:** To assess the knowledge, attitudes, and practices on safe pre-hospital handling of suspected SCI victims among public transport drivers in selected suburban areas of the Colombo District, Sri Lanka

**Methods:** A descriptive cross-sectional study was conducted in Nugegoda, Dehiwala-Mount Lavinia, and Homagama. Public transport drivers aged 20-60 years, possessing a valid driving license and at least one-year driving experience were recruited through convenience sampling (n=422), proportionally distributed across study areas. Data were collected using a newly developed, pre-tested and validated, interviewer-administered questionnaire comprising four sections including socio-demographics, knowledge (MCQs), attitudes (Likert scale), and practices (Binary scale). A 50% threshold, based on prior literature, was used to categorize knowledge and practices. Data were analysed using SPSS version 26.0.

**Results:** The response rate was 97.6%. Most participants (86.9%) were male, 28.9% aged 52-59 years, and 38.6% had education up to G.C.E. O/L. Over half (58.7%) were full-time drivers. Among respondents, 98.1% demonstrated good knowledge. While 97.8% recognized the importance of the golden hour in pre-hospital handling, only 54.9% identified numbness of extremities as a significant symptom in SCI. The mean±SD knowledge score was 76.54±11.37. Reflecting positive attitudes, 98.9% endorsed the need of first-aid training. While 55.3% exhibited poor practices, only 35.7% reported avoiding the use of three-wheelers for transporting SCI victims. Notably, 84.5% had never received first-aid training.

**Conclusion:** Despite good knowledge and attitudes, poor practice highlights the need for first-aid training for public transport drivers in collaboration with healthcare professionals. Integrating SCI-specific first-aid modules into driver licensing procedures could enhance public emergency response.

**Keywords:** Attitudes, Knowledge, Practice, Pre-hospital handling, Public transport drivers, Spinal cord injuries,



## **Nurses' Knowledge, Readiness, and Perceived Barriers Related to the Application of Mirror Therapy on Limb Amputation Rehabilitation in the National Hospital of Sri Lanka**

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**Background:** Mirror therapy (MT) is a proven method for reducing phantom limb pain and improving motor recovery in amputee patients. Nevertheless, its use in nursing practice remains limited. Since nurses are key in rehabilitation, it is important to assess their knowledge, readiness, and the challenges they face in using MT to improve patient outcomes.

**Objectives:** To assess nurses' knowledge, readiness, and perceived barriers related to the application of MT for limb amputation rehabilitation at the National Hospital of Sri Lanka (NHSL)

**Methods:** A descriptive cross-sectional study was conducted among nurses in vascular, surgical, orthopedic, accident service, and intensive care units using consecutive sampling. A self-developed questionnaire was used to assess socio-demographic details, knowledge, readiness, and barriers. The questionnaire demonstrated good reliability, with Cronbach's alpha coefficients of 0.835, 0.847, and 0.747 for the domains of knowledge, readiness, and barriers, respectively. Knowledge levels were categorized as poor (<50%), moderate (50%-75%), and good (>75%). Data were analysed using SPSS version 26.0.

**Results:** Among the participants, 93.8% had heard of MT, with 47.6% having good knowledge and 52% having moderate knowledge. The majority (95.6%) showed a willingness to use MT in patient care. However, several challenges were identified: a lack of proper equipment (65.2%), inadequate knowledge (70.3%), patient unwillingness (45.1%), and limited time due to workload (42.5%). Additionally, 59.7% of nurses felt that poor teamwork among healthcare workers made it difficult to apply MT.

**Conclusions:** Most nurses were aware of MT, having good to moderate knowledge and willing to use it in care. However, barriers such as limited knowledge, lack of equipment, patient reluctance, time constraints, and poor teamwork hinder its use. More training and support are needed to overcome these challenges.

**Keywords:** *Limb amputation, Mirror therapy, Nurses, Phantom limb pain*

## Relationship of Anthropometric Characteristics with Performance of National Level Female Swimmers in Sri Lanka

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**Background:** Swimming demands a unique blend of fitness and biomechanical efficiency. Anthropometric traits like arm span, leg length, height, and weight influence stroke length, propulsion, and drag, impacting performance. Assessing these variables offers insights for athlete profiling and training strategies in elite swimming.

**Objectives:** To determine the relationship of selected anthropometric characteristics with performances in national level female swimmers in Sri Lanka, based on Federation Internationale de Natation (FINA) points derived from each athlete's best competitive event

**Methods:** A descriptive, cross-sectional study was conducted among 25 national-level female swimmers aged 15 to 25 years, recruited via convenient sampling from clubs registered under the Sri Lanka Aquatic Sports Union. Measures of anthropometry including arm span, leg length, height and weight were evaluated using measuring tape, stadiometer and digital weight scale, respectively. The subjects' best timing in their best event was taken to calculate the FINA points as performance. Data analysis was conducted using SPSS version 25.0. Spearman's rank correlation coefficient test was used for statistical analysis.

**Results:** Participants (n=25) had a median age of 17.00±1.21 years, median height of 160.00±6.36 cm, and median body weight of 47.00±5.87 kg. The median arm span was 168.24±7.04 cm, and the median right-side leg length was 88.00±4.44 cm and left-side leg length was 88.00±4.07. Performance data showed a median FINA score of 418.00±83.68, with a range from 310 to 586; 72% of the athletes achieved scores above 400, reflecting consistent national-level standards. The performance level had a statistically significant strong positive correlation with arm span ( $r=0.810$ ,  $p<0.001$ ), while right-side leg length ( $r=0.479$ ,  $p=0.015$ ) showed statistically significant moderate positive correlation with performance level.

**Conclusions:** The present study concluded that Sri Lankan swimmers with higher arm span and more leg length are positively associated with higher FINA scores. These traits may be beneficial for performance and should be considered in swimmer development programs.

**Keywords:** Arm span, National level female swimmers, Right-side leg length, Swimming performance

## The Association of Anthropometric Characteristics and Cycling Performance among Male Elite Professional Cyclists of the Air Force Team, Sri Lanka

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**Background:** Cycling is one of the most demanding sports, requiring a combination of physiological and anthropometric abilities to maximize performance.

**Objectives:** To determine how the performance level of male elite professional cyclists of Sri Lanka is related to anthropometric traits

**Methods:** This descriptive, cross-sectional study was conducted with 20 male professional cyclists from the Sri Lankan Air Force. Anthropometric parameters including thigh circumference, limb length, body mass, and body height, were measured using measuring tapes, bioelectrical impedance analyser, portable weight scale, and stadiometer, respectively. Cyclist's performance level was examined using the Beep test to determine the maximal oxygen consumption ( $VO_2$  max). Data analysis was conducted using SPSS version 25.0. Correlations between the above factors were investigated using Pearson correlation test.

**Results:** The mean $\pm$ SD age was 26.2 $\pm$ 6 years, while the average  $VO_2$  max of the individuals was 51.61 $\pm$ 5.53 mL/kg/min. The performance level showed a statistically significant moderate negative correlation with the BMI ( $r = -0.533$ ,  $p = 0.015$ ) and the right thigh girth ( $r = -0.446$ ,  $p = 0.049$ ). However, no significant relationships were found between performance level and limb length.

**Conclusions:** The present study concluded that the cyclists with lower BMI and lower right thigh girth showed better cycling performance.

**Keywords:** *Anthropometric characteristics, Elite cyclists, Performance level,  $VO_2$  max*

## Relationship between Thoracic Mobility and Core Stability among Male School Swimmers Aged 11-17 Years from Selected Schools in Colombo Educational Division

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**Background:** Swimming is a physically demanding sport that requires a combination of strength, endurance, and flexibility to perform competitively. Among these, thoracic mobility is critical for breathing mechanics, body rotation and stroke efficiency. At the same time, core stability is necessary for preserving appropriate body alignment and lowering energy consumption in the water. Few studies have examined the connection between core stability and thoracic mobility in swimmers. Developing knowledge about this correlation may help with training adjustments and injury prevention.

**Objective:** To investigate the relationship between thoracic mobility and core stability among male swimmers aged 11-17 years in selected schools in Colombo educational Division

**Methodology:** A descriptive, cross-sectional study was conducted with 150 volunteer participants. The thoracic rotation was evaluated using the lumbar locked thoracic rotation test by iPhone compass app. Core stability was evaluated through the side plank test, trunk flexor test and trunk extensor test, one-minute sit-up strength test and the sit and reach flexibility test. The statistical analysis was performed using SPSS version 25.0. The Kolmogorov-Smirnov (KS) test was used to assess the normality of the distribution. Pearson's correlation coefficient was applied to normally distributed variables, and Spearman's rank correlation was used for non-normally distributed variables.

**Results:** Results revealed that there was a significant positive correlation between thoracic mobility and core stability (except trunk flexor test) ( $p < 0.05$ ). Right thoracic mobility had a weak, but significant positive correlation with the core strength ( $r = 0.191$ ,  $p = 0.019$ ) while left thoracic mobility did not significantly correlate with core strength. ( $r = 0.155$ ,  $p = 0.058$ ). Conversely, left thoracic mobility showed weak but significant positive correlation with the core flexibility ( $r = 0.169$ ,  $p = 0.038$ ) while right thoracic mobility did not ( $r = 0.152$ ,  $p = 0.064$ ).

**Conclusion:** Thoracic mobility had a weak but significant correlation with core stability components. The findings of this study will benefit the swimmer's performance, injury avoidance and future research into targeted thoracic mobility training in swimmers.

**Keywords:** Core endurance, Core flexibility, Core stability, Core strength, Thoracic mobility

## Relationship Between Hamstrings to Quadriceps Strength Ratio and Balance in Chronic Obstructive Pulmonary Disease Patients at Central Chest Clinic, Colombo

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**Background:** Chronic Obstructive Pulmonary Disease (COPD) is a progressive respiratory condition that frequently leads to lower limb muscle weakness and compromised balance. The hamstrings-to-quadriceps (H:Q) strength ratio is a crucial clinical measure that significantly contributes to postural stability. However, there is a lack of data regarding the relationship between the H:Q ratio and balance in COPD patients in Sri Lanka.

**Objectives:** To assess the relationship between H:Q ratio and balance among COPD patients at Central Chest Clinic, Colombo

**Methods:** A cross-sectional study was conducted at the Central Chest Clinic, involving 138 COPD patients selected by convenient sampling, aged between 35-75 years. Demographic information was gathered using an interviewer-administered questionnaire. The isometric strength of the quadriceps and hamstrings were measured using a hand-held dynamometer, and the H:Q strength ratios were calculated for both dominant and non-dominant limbs. The Berg Balance Scale (BBS) was employed to assess functional balance. Data analysis was performed using Spearman correlation with SPSS version 25.0.

**Results:** The mean±SD age of the participants was 63.6±6.7 years with a majority of males (n=113, 81.9%). The mean±SD H:Q strength ratio for the dominant and non-dominant sides were 0.65±0.2, while the mean±SD BBS score was 42.6±11.6. A significant positive correlation was observed in the BBS score with the H:Q ratio of dominant ( $r=0.41$ ,  $p=0.000$ ) and non-dominant sides ( $r=0.28$ ,  $p=0.001$ ).

**Conclusions:** The study revealed a strong positive relationship between H:Q ratio and balance in patients with COPD. This underscores the importance of lower limb muscle strength in maintaining balance. Hence, incorporating strength training exercises for the hamstrings and quadriceps into pulmonary rehabilitation could enhance balance in this population.

**Keywords:** Balance, Berg balance scale, Chronic obstructive pulmonary disease, Hamstrings-to-quadriceps ratio, Muscle strength

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*Theme: Public Health*

**Wickramaarachchi A. D. J. L.**

‘Prevalence and Associated Factors of Acute Poisoning in Galle District, Southern Province, Sri Lanka; A Cross-sectional Analytical Study. Wickramaarachchi A. D. J. L., Prasadi G. A. M, Pushpakumara P. H. G. J.’

*Theme: Pharmacy & Pharmaceutical Science*

**Tharsika K.**

‘Evaluation of suitability of palmyra palm syrup and kithul syrup as binding agents in tablet formulation. Tharsika K., Madushani J.S., Herath H.M.D.R.’

*Theme: Nursing and Midwifery*

**Weerakoon D.C.R.**

‘Dialysis Adequacy, and Pre and Post Dialysis Changes in selected biochemical parameters in Hemodialysis Patients Attending the National Nephrology Hospital Polonnaruwa. Weerakoon D.C.R., Siriwardana E.P.E.D.Z., Waidyasuriya L.S.M., Bodipaksha B.R.S., Saranajeewa D.H., Perera W.N.D., Perera N.R.P., Damayanthi H.D.W.T.’

*Theme: Medical Laboratory Science*

**Abeykoon A.M.A.U.**

‘Exploring the Therapeutic Potential of Three Hepatoprotective Plant Extracts on Diet Induced Non-Alcoholic Fatty Liver Disease-*In-vivo* Study. Abeykoon A.M.A.U., Paranagama M.P., Jayaweera W.R., Wijesundera K.K., Rajapakse R.P.V.J.’

### Best Presenters – Poster

*Theme: Public Health*

**Alupotha RPUA**

‘Potentially Malignant Oral Disorders among community dwelling adults in Estate Communities in Galle District, Sri Lanka; Prevalence and patient characteristics. Alupotha RPUA, Kotapola I.’

*Theme: Pharmacy & Pharmaceutical Science*

**Abeywickrama V. D.**

‘Development and Evaluation of a Caffeine Capsule as an Over-the-Counter Alertness Aid Using Coffea arabica Beans. Abeywickrama V. D., Ranasinghe C., Prabodha L.B.L., Karunanayaka K.D.S.V.’

**Kumara W.M.R.S.**

‘Physiochemical, Functional, and Sensory Properties of Soy Milk in Compared to Full Cream, and Skimmed Milk in Instant Tea Powder. Kumara W.M.R.S.<sup>1</sup>, Gunathilaka R.M.S.<sup>2</sup>, Dias P.G.I.’



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*Theme: Nursing and Midwifery*

**Thakshila Y. S.**

*'Prevalence of Musculoskeletal Pain during pregnancy among postpartum women- A retrospective study. Thakshila Y. S., Wijesiriwardana A.W.B.W.S., Rajasinghe U., Pathmanathan C'*

*Theme: Medical Laboratory Science*

**Kosgallana K.D.I.N.**

*'Evaluation of Typical Patient Dose for Routine Adult Chest Computed Tomography Examinations at Teaching Hospital Peradeniya, Sri Lanka. Kosgallana K.D.I.N., Welarathna W.D.S.D., Sivakumar V., Hewavithana P.B.'*

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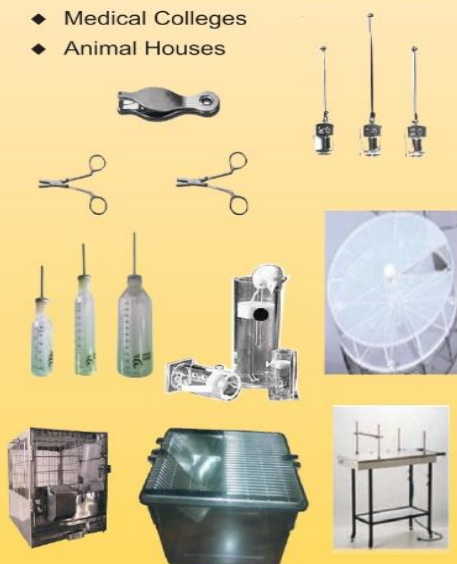
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