Proceedings of the 2nd International Research Symposium
Faculty of Allied Health Sciences - 2024

University of Ruhuna

‘Developing a Future Multidisciplinary Workforce in Rapidly Changing Healthcare’

July 05, 2024

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

iRuFARS 2024

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

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Foreword

The 7th Research Symposium and 2nd International Conference of the Faculty of Allied Health Sciences, University of Ruhuna, Galle, Sri Lanka was conducted on 5th July 2024. The 66 oral and 65 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 proceedings book. The abstracts have been edited to ensure language accuracy and adherence to the proceeding format. The responsibility of the contents of the abstracts included in this proceeding, 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 2nd International Research Symposium, Faculty of Allied Health Sciences, 2024, University of Ruhuna'.

Editorial Board
iRuFARS - 2024

Message from the Keynote Speaker

Medication errors and medication related adverse events are significant causes of patient harm and mortality. The World Health Organization (WHO) has identified the need to significantly reduce harm from medication related problems (MRPs) by 50% by 2025.

The key areas to be addressed include adequate workforce capacity, knowledge, skills, and overall capability and competency; high risk medication systems; the safety and quality of the medicines themselves and the handover of care, especially between hospitals and the community.

In alignment with these global objectives, Sri Lanka developed a National Medicinal Drugs Policy in 2006, which has recently been reconfirmed. This policy supports the same core areas for intervention as identified by the WHO and the International Pharmaceutical Federation (FIP).

The implementation of a clinical pharmacy workforce has been globally recognized as a critical medication safety intervention. Evidence from around the world demonstrates that when pharmacists work collaboratively with a patient-focused approach, there is a reduction in mortality, length of hospital stays, and adverse events.

The Collaboration of Australian Sri Lankan Pharmacists for Practice Education and Research (CASPPER) was established in 2009 following an invitation to undertake undergraduate education at the University of Peradeniya. CASPPER's mission is to support sustainable undergraduate and postgraduate education, underpinned by translational research and the development of clinical pharmacy services.

CASPPER has collaborated with local medical and pharmacy researchers to develop its own evidence base using a standardized research methodology across different patient cohorts and both acute inpatient and outpatient settings. Moreover, CASPPER has partnered with local academics and hospital staff to facilitate practical, hands-on skills development workshops. These ‘Train the Trainer’ workshops aim to disseminate key messages for teaching and delivering pharmaceutical care across Sri Lanka. The advances in education, training, research, and practice spearheaded by CASPPER demonstrate the potential for similar achievements in all allied health professions.

Finally, I extend my sincere congratulations to the organizing committee and all the research presenters of the International Research Symposium of the Faculty of Allied Health Sciences, University of Ruhuna (iRuFARS 2024). Your dedication to fostering a collaborative and innovative environment is commendable and crucial for addressing the complex challenges we face today. May this symposium inspire continued excellence and progress in multidisciplinary healthcare, ultimately leading to improved patient outcomes and a healthier future for all.

Prof Ian Coombes
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University of Queensland
Australia
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Message from the Keynote Speaker

In the critical field of medication safety, there are five key messages for pharmacists and all clinicians to ensure optimal patient care. Firstly, keep your eyes open and observe what you see. Assess how sick the patient looks and determine if they have a carer or bystander who can answer questions, explain things, and receive information. Secondly, keep your ears open and listen attentively. If medical or nursing staff have issues with accessing, administering, or continuing medication, or if they suspect the patient may have a problem or reaction, offer your help. It is crucial to consider what is not being said or shared.

Thirdly, use all available information but recognize its limitations and what isn't available. If the information does not make sense, go back and start again, referring to notes, guidelines, digital resources, or AI tools. Always observe the patient and their surroundings. For instance, if a drug dose is based on weight, does the patient look like they weigh 85 kg? If a pump is alarming, check if the infusion is running; whether it has precipitated, whether it has run out, or whether it is still needed.

Fourthly, set your goals and standards based on the patient in front of you, not just the guidelines. Finally, be a problem solver. As a healthcare professional, you are responsible within your scope of practice. If the right strength or type of drug is not available, work with your colleagues to decide on the best course of action, source the necessary medication, and ensure the clinical team and patients know how to use it. Research shows that existing teams can resolve up to 15% of medication-related problems identified by a clinical pharmacist, and medical staff accept 85% of recommendations made to improve medication use.

These key messages are principles based on global evidence and supported by local evidence from collaborative work over the past 15 years. The Collaboration of Australian Sri Lankan Pharmacists for Practice Education and Research (CASPPER) has collaborated on research to identify opportunities for optimizing medications. The first controlled study showed that adding a pharmacist to the team resulted in patients receiving more appropriate medications, being more informed about what to take and why, and staying out of the hospital for longer periods. Contrary to concerns, medical staff welcomed and acted upon the majority of pharmacists' recommendations to optimize medications. Similar studies have been conducted in outpatient clinics with patients with diabetes, chronic kidney disease, acute inpatient settings, coronary disease, and cancer.

Finally, let me extend my heartfelt congratulations to the presenters for enriching the symposium with your contributions, and congratulate them for successfully publishing their research findings. I wish fervently that iRuFARS 2024 will be a resounding success.

Dr. Judith Coombes
Conjoint Senior Lecturer
University of Queensland
Australia
Education Pharmacist
Princes Alexandra Hospital, Australia

Message from the Keynote Speaker

In pursuit of sustainable improvements in medicine management to enhance the health of all Sri Lankans, the Collaboration of Australian Sri Lankan Pharmacists for Practice Education and Research (CASPPER) has undertaken a multifaceted approach including direct undergraduate education, ward-based clinical teaching, and capacity-building initiatives like the Train the Trainer (TtT) projects.

The TtT program stands as a cornerstone in developing clinical pharmacy academic trainers and establishing clinical pharmacists within Sri Lankan hospitals. With the aim of preparing the academics to deliver clinical pharmacy curriculum for formalised courses in Bachelor of Pharmacy programs, a five-day workshop was conducted at the University of Sri Jayewardenepura. The workshop was funded by World Health Organization (WHO). Attended by 18 pharmacy and pharmacology academics from five universities, this workshop was facilitated by five Australian and British clinical pharmacists associated with CASPPER.

Continuing this endeavor, in 2016, a workshop was conducted at the University of Peradeniya focused on preparing academics for case-based teaching using real-life scenarios, simulating ward environments with mock patients. A total of 14 Pharmacy academics from five universities participated in this initiative.

Most recently, in August 2023, CASPPER collaborated with University of Sri Jayewardenepura to conduct a comprehensive four-day workshop. The goal was to empower academics to lead clinical pharmacy courses, mentor junior academic educators, and prepare hospital pharmacists to deliver crucial clinical pharmacy services. The workshop included mock-ward clinical teaching followed by hands-on experience in general medical and mental health wards at Colombo South Teaching Hospital. Participants engaged in patient conversations, medication history reconciliation, identification of medication-related problems, and case presentations, all supported with formative feedback.

Exciting outcomes from a ten-month post-workshop survey reveal that universities are now implementing ward-based clinical teaching utilizing mock wards and case-based discussions, providing robust evaluation and feedback to students. Hospital staff have adopted practices such as discharge medication reconciliation, active participation in medical rounds, and patient counseling. Participants have reported improved communication skills, strengthened relationships with medical and nursing teams, and increased recognition of pharmacists as essential members of the healthcare team. Collaboration between academics and clinical staff has also significantly improved, with healthcare workers increasingly seeking direct pharmacist involvement in medication-related matters.

These initiatives underscore CASPPER's commitment to advancing pharmacy education and practice in Sri Lanka, fostering a culture of collaboration, and ultimately improving patient care outcomes across the healthcare spectrum.

Last but not least, I wish all the participants, presenters, and evaluation panelists to have a pleasant and productive experience in attending the International Research Symposium of the Faculty of Allied Health Sciences, University of Ruhuna (iRuFARS 2024).

Professor Amanda Wheeler
Professor of Mental Health
Deputy Head of School (Research)
School of Pharmacy and Medical Sciences
Griffith University, Australia

Message from the Vice Chancellor and the Chief Guest

It gives me immense pleasure to extend my warmest greetings to the annual research symposium of the Faculty of Allied Health Sciences (FAHS), University of Ruhuna (iRuFARS 2024). This significant event is continued at an international level, showcasing the remarkable progress the faculty has made and global reach of the academic community.

The Faculty of Allied Health Sciences as the youngest and most vibrant addition to our institution, is dedicated to nurturing and producing technically and professionally proficient healthcare professionals who meet the evolving demands of modern healthcare. Responding to the rising need for advanced research capabilities among allied health professionals, the faculty has undertaken the admirable initiative of organizing this annual research symposium.

Beyond being a platform for scholars to share their discoveries, this symposium fosters interactive discussions and knowledge sharing among researchers, healthcare practitioners, and policymakers. The theme of iRuFARS 2024, 'Developing a Future Multidisciplinary Workforce in Rapidly Changing Healthcare' underscores the crucial role of healthcare in eradicating poverty, achieving sustainable development, fostering economic growth, and building prosperous communities in the changing world.

Developing a future multidisciplinary workforce in rapidly changing healthcare is essential to meet the complex and diverse needs of the patients. As healthcare continues to evolve with advancements in technology, shifting disease patterns, and changing patient demographics; it is imperative to cultivate a workforce that is both adaptable and proficient across various disciplines. This includes integrating skills from fields such as medicine, nursing, allied health sciences, science and technology, and public health to create a cohesive and comprehensive care approach. By fostering collaboration and cross-disciplinary training, healthcare professionals can better understand and address the multifaceted nature of patient care. Moreover, a multidisciplinary workforce is better equipped to innovate and implement new strategies, ensuring that healthcare delivery remains effective and efficient amidst ongoing changes. Investing in such a workforce not only improves patient outcomes but also enhances the resilience and sustainability of healthcare systems globally. As we look to the future, prioritizing the development of a multidisciplinary workforce will be a key to advancing healthcare and achieving a healthier, more equitable world.

I extend my sincere gratitude to the organizing committee, under the leadership of the Dean of the Faculty of Allied Health Sciences and Chairperson of the Symposium. Their relentless efforts in organizing this symposium for the seventh consecutive year, despite the financial challenges, deserve our utmost appreciation.

I extend my heartfelt wishes for the success of the 7th Research Symposium of the Faculty of Allied Health Sciences, University of Ruhuna (iRuFARS 2024). I am confident that this symposium will be engaging and fruitful, in developing a future multidisciplinary workforce in rapidly changing healthcare.

Senior Professor Sujeewa Amarasena
Vice Chancellor
University of Ruhuna

Message from the Dean, Faculty of Allied Health Sciences

As the Dean of the Faculty of Allied Health Sciences at the University of Ruhuna, it is my distinct honor to conduct the consecutive 7th research symposium and the 2nd International Research Symposium, iRuFARS 2024. This year's theme, 'Developing a Future Multidisciplinary Workforce in Rapidly Changing Healthcare' signifies our enduring commitment to advance multidisciplinary research in Allied Health Sciences, highlighting a significant milestone.

The iRuFARS 2024 also demonstrates our commitment to advancing research within the Faculty of Allied Health Sciences. The symposium's proceedings capture the essence of diverse research activities, reflecting the dedication and expertise of health professionals in different fields. It is immensely rewarding to witness the outstanding research outputs from our community whose efforts have substantially contributed to our academic excellence. This symposium not only highlights their innovative work but also fosters an environment of collaborative research, encouraging partnerships that extend beyond our university to the national and international research community. I encourage all participants to seize this opportunity for networking, forging new connections, and exploring mutually beneficial opportunities.

I extend my deepest gratitude to the Vice Chancellor of the University of Ruhuna for unwavering support in conducting this event. The success of this symposium is evident in the dedication and hard work of numerous colleagues. My heartfelt appreciation goes to Mrs. Vindya Pathiraja, Chairperson, and all the committee members of iRuFARS 2024 for their persistent efforts in organizing this event despite the challenges posed. I also wish to acknowledge the invaluable contributions of our reviewers and editorial board members.

My congratulations to all presenters on your remarkable achievements. I am confident that this symposium will be as exciting and scientifically enriching with your participation. Let us continue to work together, pushing the boundaries of health research and making meaningful contributions to the field of Allied Health Sciences.

Warm regards,

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

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Message from the Chairperson iRuFARS 2024

I am pleased to write this message for the proceedings of the Ruhuna University Faculty of Allied Health Sciences International Research Symposium (iRuFARS 2024), themed 'Developing a Future Multidisciplinary Workforce in Rapidly Changing Healthcare'. Scientific knowledge is the foundation for new knowledge. So, as the Chairperson of iRuFARS 2024, I believe this symposium serves as a catalyst for innovation, transformation, and the exchange of scientific findings and research ideas that shape the future and future research, further paving the path for new knowledge.

iRuFARS 2024, themed 'Developing a Future Multidisciplinary Workforce in Rapidly Changing Healthcare', is one of the pinnacle events of the Faculty of Allied Health Sciences, University of Ruhuna. This symposium aims to address the dynamic shifts in healthcare by fostering multidisciplinary collaboration and innovation. As the chairperson, I am honored to oversee this convergence of global experts, researchers, and practitioners who will share their insights and advancements, ultimately shaping the future of healthcare in a rapidly evolving landscape.

The pre-congress workshop of iRuFARS 2024 themed under, 'A Guide to Become a Professional Pharmaceutical Manufacturer - A Brief Insight', aims to provide participants with a comprehensive understanding of the pharmaceutical manufacturing industry. The workshop features experts from the Sri Lanka Pharmaceutical Manufacturers' Association (SLPMA), ensuring it remains a highlight of our symposium's agenda.

Let me gratefully acknowledge the valuable advice and guidance of the Senior Professor Sujeewa Amarasena, Vice Chancellor, University of Ruhuna, Prof. E.P.S. Chandana, Deputy Vice Chancellor, University of Ruhuna and Professor Imendra Kotapola, Dean, Faculty of Allied Health Sciences. The Keynote Speakers' expertise and insights will leave an indelible mark, setting the stage for the intellectual discourse that has defined this symposium, I am grateful for their dedication and commitment. This symposium, represents the culmination of months of hard work, dedication, and profound commitment by the iRuFARS 2024 organizing committee, so I am thankful for their continued support and dedication in organising this event. Moreover, my profound thanks also go to the reviewers, the session chairs, and the evaluators for diligently maintaining this symposium's scientific integrity and balance.

I look forward to celebrating the achievements and discoveries that await us at iRuFARS 2024.

Ms. Vindya Pathiraja
Chairperson - iRuFARS 2024

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OP 01

Local Pharmaceutical Industry in Sri Lanka: Regulatory Challenges

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Background: The current pharmaceutical industry in Sri Lanka heavily relies on imports. In today's rapidly changing economic environment, pharmaceutical manufacturing companies are experiencing many challenges. Encouraging local pharmaceutical production is imperative to supply medicines for affordable prices fulfilling market needs.

Objective: To explore the regulatory challenges that curtail the optimum production capacity of local pharmaceutical manufacturers (LPM) in Sri Lanka

Methods: A comprehensive approach was employed targeting regulatory affairs managers from all 19 local pharmaceutical companies listed on the National Medicines Regulatory Authority (NMRA) website. Regulatory challenges faced by LPM were targeted. A quantitative-qualitative mixed study was performed using a semi-structured questionnaire. Quantitative data were subjected to descriptive statistical analysis and for qualitative data, the thematic analysis method was employed.

Results: Six professionals provided data revealing notable insights. Significant themes identified were pharmaceutical site approval delays, challenges in the product registration process, evaluation timeframe for document response, and requirement for user-friendly policies. Under the theme of site approval delays, subthemes were identified such as unavailability of a dedicated division for LPM at NMRA, low system efficiency, and absence of thorough local good manufacturing practices. Additionally, difficulties related to site visits, audits, and shortage of evaluators were noted. Significant findings for product registration were stringent price controls and limitations on the number of products registering to one particular generic, which have led to monopolies within the industry. Many respondents mentioned the delay of the overall process of product registration due to the inefficiency of NMRA. Moreover, participants expressed the need for user-friendly government policies for LPM. Further, emerging interest of foreign investors in establishing pharmaceutical manufacturing facilities in Sri Lanka was revealed. However, the absence of formal education and procedures for foreign investors could be challenging for the industry.

Conclusions: Pharmaceutical manufacturing companies face many challenges due to regulatory complexities, and delays which could affect to optimum production capacity of local pharmaceutical manufacturers. By addressing current issues, the growth of the local pharmaceutical manufacturing industry can be foreseeable in the future.

Keywords: *Inefficiency of NMRA, Medicines, Pharmaceutical industry, Production capacity, Regulatory challenges*

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OP 02

Analyzing the Molecular Mechanisms of *Passiflora foetida* Aerial Parts Extract in Managing Inflammatory Pain: A Network Pharmacology and Bioinformatics Approach

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Background: Inflammatory pain (IP) poses a significant global health challenge, with peripheral tissue damage and inflammation identified as its primary causes. *Passiflora foetida* (PF) is widely recognized for its analgesic properties in Ayurvedic medicine. However, the mechanisms underlying the analgesic potential of PF have not been fully elucidated.

Objectives: To analyze the molecular mechanisms of the aqueous extract of PF aerial parts in managing IP using a network pharmacology and bioinformatics approach

Methods: The scientific literature was reviewed to identify bioactive compounds in PF. Compound-target genes were identified using Swiss Target Prediction and Similarity Ensemble Approach Search Server. Target genes relevant to IP were sourced from DisGeNET, Online Mendelian Inheritance in Man (OMIM), and Gene Card databases. VENNY 2.1 software was used to determine the common genes between PF and IP, followed by GO_KEGG pathway enrichment analysis. Protein-Protein Interaction (PPI) network parameters were visualized and analyzed using STRING database, Cytoscape and Cytohubba.

Results: The screening identified 22 bioactive compounds involved in 801 PF targets and 1068 targets related to IP, with 163 intersection genes (8%). The PPI network contained 163 nodes and 3108 edges, with the top ten interacting hub genes being IL-6, TP53, CASP3, HIF1A, BCL2, JUN, NFKB1, TNF, MMP9, and PTGS2 genes. GO analysis revealed that biological processes with higher enrichment are predominantly linked to the regulation of inflammatory response, cellular response to chemical stress, and response to oxidative stress. KEGG pathway enrichment analysis revealed 179 significantly enriched pathways modulated by PF, including pathways associated with pain such as MAPK, relaxin signaling pathways, PD-L1 expression, and the PD-1 checkpoint pathway.

Conclusions: The study results indicate the potential of PF extract to modulate multiple pathways associated with pain pathophysiology, providing valuable insights for future research and potential therapeutic interventions.

Keywords: *Inflammatory pain, Network pharmacology, Passiflora foetida*

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OP 03

Exploring the Pharmacological Mechanism of *Cinnamomum zeylanicum* Fruit Extract in Treating Gingivitis Using Network Pharmacology

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Background: *Cinnamomum zeylanicum* (CZ), a traditional Ayurvedic medicinal plant, is known for its anti-inflammatory properties, particularly in the treatment of gingivitis. Despite its recognized efficacy, the precise mechanism of action remains elusive. In this study, we employed a network pharmacology (NP) approach to elucidate the mechanism of action of its bioactive constituents against gingivitis.

Objectives: To identify pathways associated with gingivitis that are modulated by bioactive compounds present in CZ fruit using NP

Methods: Firstly, target genes of the main bioactive components of CZ were collected from Swiss Target Prediction, Similarity Ensemble Approach Search Server, and Super-PRED. Key genes involved in the pathophysiology of gingivitis were retrieved from Genecards, Online Mendelian Inheritance in Man, and DisGeNET databases. Common targets were identified using Venny 2.1 and used to construct a protein-protein interaction network, visualized using Cytoscape. Gene Ontology (GO) and Kyoto Encyclopedia of Genes and Genomes (KEGG) analyses were performed with the assistance of bioinformatics tools.

Results: The screening process identified 637 target genes of active compounds in CZ fruit extract and 5386 gingivitis-related gene targets. Of these, 286 common targets were identified. In the STRING database, a network consisting of 286 nodes and 5369 edges was constructed. The top 10 genes associated with the activity of CZ included STAT3, TP53, GAPDH, BCL2, IL6, ESR1, HSP90AA1, TNF, MTOR and CASP3. The KEGG pathway analysis revealed 291 significant pathways, suggesting the potential reduction of various inflammatory processes associated with anti-gingivitis activity by CZ fruit extract, with the phosphoinositide 3-kinase (PI3K)/protein kinase B (AKT) signaling pathway identified as the most enriched pathway. Furthermore, the biological processes, cellular components, and molecular functions with the highest enrichment scores were positive regulation of protein kinase B signaling, membrane raft, and protein tyrosine kinase activity, respectively.

Conclusions: The results revealed that CZ fruit extract could modulate multiple pathways involved in the pathophysiology of gingivitis suggesting it as a beneficial therapeutic option within traditional medicine for gingivitis by modulating multiple pathways involved in its pathophysiology.

Keywords: *Gingivites, Cinnamomum zeylanicum, Inflammation, Network pharmacology, Traditional ayurvedic medicine*

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OP 04

Impact of Patient Information Leaflet on Improving Knowledge of Antibiotic Resistance and Rational Use of Antibiotics among Parents of Pediatric Patients

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Background: The misuse and overuse of antibiotics have become a serious problem today particularly prevalent in developing countries. This phenomenon exacerbates the emergence and dissemination of antibiotic resistance among bacterial populations. The lack of comprehensive understanding regarding antibiotics serves as a primary driver behind their inappropriate usage. Patient information leaflets (PIL) are deployed as a means to enhance public knowledge and awareness regarding antibiotics.

Objective: To assess the impact of the PIL on improving knowledge of antibiotic resistance and the rational use of antibiotics

Methods: This interventional study was carried out in the Out Patient Department of the teaching hospital, Karapitiya. The PIL about antibiotics and rational usage was validated using Ensuring Quality Information for Patients (EQIP) and Baker Able Leaflets Design (BALD) tools and evaluated by an expert panel and parents of pediatric patients respectively. The purposive sampling method and random sampling method were used to select the samples respectively. A questionnaire was used as user testing to access the impact of knowledge of antibiotics and rational usage after reading the developed leaflet.

Results: According to the EQIP tool, mean±SD quality score was 65.62±12.61%, and according to the BALD tool, mean±SD score for designing of the PIL was 18.00±1.77%. PIL was validated for readability with the mean±SD score was 95.00±11.00%. The overall user testing means±SD scores had significantly (p<0.001) improved from 31.00±18.19% to 88.50±15.49% level which showed significant knowledge improvement about antibiotic resistance and the rational use. The mean difference was 57.50. The mean±SD user-opinion score for the PIL was 17.88±1.64.

Conclusions: The study showed a significant improvement in knowledge levels after reading the validated leaflet. The user opinion test reported that the majority of the participants rated the PILs' content, legibility, and design as good. The PILs obtained good EQIP scores and satisfactory level of score for BALD criteria. The current study highlighted the importance of patient education and importance of PILs to improve knowledge antibiotic resistance and the rational use.

Keywords: *Antibiotics resistance, Patient education, Patient Information Leaflets, Pediatric, User-testing, Rational*

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OP 05

Enhancing Geriatric Medication Management: Development of a Decision Support Tool for Healthcare Providers to Ensure Appropriate Prescribing in Sri Lankan Older Adults: A Study Protocol

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Background: As the aging population expands, ensuring the appropriate prescribing of medication for older adults is increasingly vital. Despite the availability of numerous decision support tools, their applicability to Sri Lankan settings is limited due to unique healthcare dynamics. The development of such tools should follow a meticulously controlled and formalized process grounded in scientific methods to ensure the validity, reliability, and applicability of the resulting tool.

Objective: To develop country-specific prescribing appropriateness criteria tool to assist healthcare providers in ensuring the judicious prescribing of medication for Sri Lankan older adults

Methods: This systematic approach comprises three primary stages: preliminary criteria development, expert consensus, and pilot testing. To initiate the preliminary criteria development, an extensive literature review will be conducted to gather pertinent evidence, guidelines, and best practices, both globally and within the Sri Lankan context. Preliminary criteria list will be formulated by the principal investigator and reviewed by three internal evaluators, including two clinical pharmacists from Australia and one consultant physician from Sri Lanka. Following this, the finalized preliminary list will undergo validation by a multidisciplinary panel of experts, including Sri Lankan geriatric care specialists, pharmacologists, and Australian clinical pharmacists. The validation process will utilize the RAND/UCLA Appropriateness Method (RAM), which involves rating the preliminary criteria list and conducting face-to-face interviews to address any discrepancies, introduce new criteria, and enhance clarity between rating rounds. Finally, the validated tool will undergo pilot testing in real-world clinical settings. This will be a cross-sectional study applying the criteria to a sample of older adult patients attending monthly clinics at a tertiary care public hospital.

Results: The resulting tool will be characterized by its scientific integrity, providing healthcare providers with valid and reliable information to support evidence-based prescribing decisions for Sri Lankan older adults.

Conclusions: This validated tool will hold potential utility for prescribers and hospital pharmacists within the Sri Lankan public healthcare sector, fostering improvements in prescribing practices and promoting the quality use of medicines among the elderly population.

Keywords: *Appropriate prescribing, Consesnsus, Geriatric, Older adults, Validation,*

Acknowledgement: Research training program (international) scholarship

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OP 06

Therapeutic Effects of *Atalantia ceylanica* (Arn.) Oliv. Leaves Essential Oil in Acute Bronchitis Treatment: Network Pharmacology-based Exploration

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Background: Network pharmacology involves in mapping of poly-pharmacology networks onto the human disease-gene network, thereby uncovering the therapeutic potential of numerous plant extracts and herbal remedies. *Atalantia ceylanica* (AC), a plant belonging to the Rutacea family, has demonstrated effectiveness in treating acute bronchitis within traditional medicine systems, yet its mechanism of action remains unclear.

Objective: To identify pathways associated with bronchitis that are modulated by active compounds present in the essential oil of AC leaves, using network pharmacology

Methods: Active components and action targets of AC were identified using the Swiss Target Prediction and SEA search server databases. Targets associated with acute bronchitis were obtained from the Gene card and DisGeNET databases. A protein-protein interaction (PPI) network was constructed using the STRING database, with common targets were identified through Venny 2.1. The network was visualized using Cytoscape. Gene ontology (GO) and Kyoto Encyclopaedia of Genes and Genome (KEGG) pathway analyses were conducted using bioinformatics data tools.

Results: The screening involved four bioactive compounds and 336 AC-related gene targets, alongside 1557 acute bronchitis-related gene targets, yielding 79 common gene targets. The PPI network compromised of 78 nodes and 430 edges. According to the results of GO analysis, the top biological processes, cellular components, and molecular functions enriched were responded to molecules of bacterial origin, membrane raft, and non-membrane spanning protein tyrosine kinase activity, respectively. KEGG pathway analysis identified 87 related significant pathways (false detection rate = 0.019), indicating potential attenuation of inflammatory processes related to acute bronchitis pathophysiology by AC essential oil, including neuroactive ligand-receptor interaction, chemical carcinogenesis receptor activation, NF-kappa B signaling pathway, and arachidonic acid metabolism.

Conclusion: This study highlights AC as a valuable therapeutic option in traditional medicine system in Sri Lanka for the treatment of acute bronchitis, providing a foundation for its enhanced clinical application.

Keywords: *Acute bronchitis. Atalantia ceylanica, Essential oil, Inflammation, Network pharmacology*

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OP 07

Comparison of *in vitro* Antioxidant and Anti-inflammatory Activity of Two *Cinnamomum zeylanicum* Blume Varieties

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Background: *Cinnamomum zeylanicum* Blume known as Ceylon cinnamon has been widely used in traditional medicines since ancient times. *Sri Gemunu* (SG) and *Sri Wijaya* (SW) are the most cultivating cinnamon varieties in Sri Lanka.

Objective: To compare *in vitro* antioxidant and anti-inflammatory activities of barks and leaves of SG and SW varieties of *C. zeylanicum*

Methods: Aqueous extracts of SG barks (SGB), SW barks (SWB), SG leaves (SGL), and SW leaves (SWL) were subjected to *in vitro* DPPH radicals scavenging assay and ferric reducing antioxidant power (FRAP) assay using ascorbic acid (AA) as the standard. Inhibition of egg albumin denaturation (EA) and heat-induced human red blood cell membrane stabilization (HRBC) assays were used to assess the *in vitro* anti-inflammatory activity, using diclofenac sodium as the standard. Tests were done in triplicates.

Results: Half-maximal inhibitory concentrations (IC_{50}) of SGB, SWB, SGL, SWL and AA for DPPH assay were 2.86±1.03, 6.58±2.63, 31.83±12.05, 26.14±12.06 and 1.78±0.37 in µg/mL, respectively. FRAP assay showed antioxidant capacities as 90.44±10.95, 253.61±4.46, 31.22±3.94, and 65.17±4.85 in mg AA equivalent/g for SGB, SWB, SGL, and SWL, respectively. The IC_{50} values obtained in EA assay for SGB, SWB, SGL, SWL and the standard were 1.78±0.10, 1.06±0.19, 2.06±0.22, 1.16±0.09, and 0.74±0.01 in mg/mL while IC_{50} values obtained in HRBC assay were 1.79±0.17, 1.74±0.11, 3.44±0.15, 1.96±0.09, and 0.95±0.03 in mg/mL, respectively. Results showed barks have significantly higher antioxidant capacity than leaves of the same variety ($p<0.05$) in FRAP assay. SW variety showed the highest antioxidant capacity among barks and among leaves of both varieties ($p<0.05$) in FRAP assay while comparable activity was shown ($p>0.05$) in DPPH assay. When consider the anti-inflammatory potency, barks and leaves of the same variety and barks of the two varieties showed comparable potency ($p>0.05$) in EA and HRBC assays, while SWL showed the highest activity among leaves of the two varieties ($p<0.05$) in HRBC assay.

Conclusion: Both barks and leaves of *C. zeylanicum* varieties have comparable antioxidant and anti-inflammatory activities.

Keywords: *Anti-inflammatory, Antioxidant, Barks, Cinnamon, Leaves*

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OP 08

Current Regulatory Challenges for the Registration of Generic Medicines in Sri Lanka

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Background: Generic medicines play a crucial role in ensuring the affordability of pharmaceuticals in the market. Nevertheless, stringent regulatory authorization is indispensable for upholding the quality of these generics. However, overly complex or inefficient regulations can lead to delays and increased costs in generic medicine registration, ultimately limiting patient access to affordable treatments in Sri Lanka.

Objective: To determine the challenges encountered by regulatory pharmacists in generic medicine registration in Sri Lanka

Methods: A qualitative study was conducted using an interviewer-administered structured questionnaire using a convenient sample of 20 regulatory managers employed at private pharmaceutical companies that manufacture/import generic medicines to Sri Lanka. A manual thematic analysis was used for the data analysis by generating initial codes, themes, and sub-themes to write descriptions for the research objectives.

Results: About 80% of pharmaceutical companies have been involved in generic medicine registration process for less than 20 years. Four main themes emerged: regulatory requirements for registering generic medicines, challenges faced by regulatory pharmacists, areas for improvement in the registration process, and opportunities for regulatory officers. The main challenges include poor interaction with the National Medicines Regulatory Authority (NMRA) and outdated guidelines (75%), registration restrictions and lengthy documentation (85%), and the need for better follow-up and communication with the NMRA (80%). Opportunities involve increased contact with regulatory authorities (90%) and direct exposure to the regulatory system (50%). These findings highlight the issues and potential improvements in the registration process for generic medicines in Sri Lanka.

Conclusions: Regulatory pharmacists face daily challenges due to the complex and lengthy registration process. To improve efficiency, there is a pressing need to digitalize the registration process and refine the dossier submission and evaluation steps. Digitalizing the registration process for generic medicines could enhance access, speed, and transparency of services from the NMRA.

Keywords: *Dossier, Generic medicines, Pharmaceutical companies, Regulatory pharmacist*

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OP 09

Molecular Insights into Metformin and Ceftriaxone Combination against Gastroenteritis: Multifaceted Actions Revealed by Network Pharmacology

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Background: Network pharmacology (NP) investigates the multifaceted actions of drugs across various targets, aiding drug discovery for complex diseases like gastroenteritis (GE). Metformin (MET) has antihyperglycemic and potential antimicrobial effects, while ceftriaxone (CEF) is effective against gram-negative strains but prone to resistance. Combining CEF with MET may synergize their antimicrobial effects, potentially reducing doses and resistance.

Objective: To predict the potential synergy between MET-CEF combination against GE using NP approaches

Methods: Pharmacodynamic gene targets of MET and CEF were predicted via Swiss Target Prediction, Pharmapper, and SEA Search Server. GE-associated genes were sourced from DisGeNET, OMIM, and GeneCard databases. Intersection genes between drugs and GE were determined using Venny 2.1. Protein-protein interaction (PPI) network was constructed using the STRING database. The resulting network was analyzed using Cytoscape. Cytoscape's cytoHubba v0.1 was used to determine the top ten interacting genes. Subsequent analysis involved Gene Ontology and Kyoto Encyclopedia of Genes and Genomes pathway enrichment analysis.

Results: The study revealed 188, 194, and 382 potential target genes for MET, CEF, and the MET-CEF combination, respectively, with 988 genes associated with GE. The intersection of target genes between GE and MET, CEF, or the MET-CEF combination was 27, 43, and 55, respectively, indicating broader gene modulation with the MET-CEF combination compared to individual drugs. The PPI network comprised 55 nodes and 376 edges, with CASP3, interleukin 2, and NFκB1 identified as the most interacting genes, predominantly involved in cellular apoptotic and inflammatory pathways. The primary biological process targeted by the MET-CEF combination was the regulation of the inflammatory response. Enriched pathways included Yersinia infection, PD-L1 expression, PD-1 Checkpoint pathway, and C-type lectin receptor signalling, associated with GE pathophysiology.

Conclusions: The MET-CEF combination has the potential to target multiple pathways associated with GE pathophysiology, indicating its enhanced efficacy as a promising therapeutic option for GE treatment with potential synergistic effects.

Keywords: *Ceftriaxone, Gastroenteritis, Metformin, Network pharmacology, Synergism*

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OP 10

Evaluation of Suitability of Palmyra Palm Syrup and Kithul Syrup as Binding Agents in Tablet Formulation

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Background: Binders are used to impart cohesiveness to granules, for mechanical strength and drug releasing in drug delivery. Natural binders, being cost-effective, non-toxic, biocompatible, and environmentally friendly, are ideal as novel adhesives over synthetic binders.

Objective: To investigate the possibility of using palmyra palm (*Borassus flabellier* Linn) syrup and kithul (*Caryota urens*) syrup as binders in tablet formulation

Methods: The sap water obtained from the inflorescence of the *Borassus flabellier* Linn and *Caryota urens* was filtered and heated separately to concentrate to obtain palmyra palm syrup and kithul syrup. Frusemide tablets were made with maize starch paste, palmyra palm and kithul syrups as binders (27%, 22% and 23% w/w), using single punch tablet press by wet granulation process. Prepared tablets were evaluated for weight variation, hardness, friability, disintegration time, assay and dissolution according to British Pharmacopoeia 2020 and results were compared using SPSS version 22.0.

Results: Tablets made with palmyra palm syrup and kithul syrup had pleasant aromas of respective syrups and were sunset yellow in color. All tablets passed the weight variation test with no statistical differences ($p>0.05$). The hardness of the tablets made with palmyra palm syrup (99.13 N), kithul syrup (120.1 N) were significantly higher ($p<0.05$) compared to maize starch paste-employed tablets (57.06 N). The friability percentage of all tablets made with palmyra palm and kithul syrups was below 1%, with no statistical differences ($p=0.133$ and $p=0.310$). Tablets made with palmyra palm syrup, kithul syrup, and maize starch paste disintegrated within nine minutes (7.5, 7.2, and 8.9 min), and showed statistical significance compared to maize starch paste employed tablets ($p=0.014$ and $p=0.044$). The content of frusemide in tablets made with palmyra palm syrup, kithul syrup and maize starch paste were 101.31%, 101.32%, and 101.68%, respectively with no statistical significance compared to maize starch paste incorporated tablets ($p=0.429$ and $p=0.849$). All three types of tablets released over 85% of the drug within 40 minutes, meeting the dissolution test requirements.

Conclusions: Palmyra palm syrup and kithul syrup demonstrated excellent binding properties within pharmacopeia standards similar to maize starch paste in formulating frusemide tablets.

Keywords: *Binding agents, Frusemide, Kithul syrup, Palmyra palm syrup, Tablet formulation*

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OP 11

Knowledge, Attitudes and Practices on Radiopharmaceuticals among Patients Undergoing Radiopharmaceutical Procedures: A Cross-sectional Study

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Background: Radiopharmaceutical procedures are integral for diagnostic and therapeutic practice in modern medicine. Understanding knowledge, attitudes and practices on radiopharmaceuticals among patients undergoing radiopharmaceutical procedures are essential for ensuring patient safety and optimal outcomes.

Objective: To assess the knowledge, attitudes and practices on radiopharmaceuticals among patients undergoing radiopharmaceutical procedures and determine the associated demographic factors

Methods: A descriptive cross-sectional study was conducted using convenience sampling method involving patients who were treated or diagnosed as cancer patients with radiopharmaceuticals (n=384) at Nuclear Imaging Unit, teaching hospital, Karapitiya. A structured verbal questionnaire developed by the investigator and validated by two experts was used. The scoring for the questions was determined by giving one point for each correct answer and zero for incorrect or no response answer based on literature. In knowledge, score ranges of 0-10 and 11-27 were considered as poor and good. In attitudes and practices, score ranges of 0-4 and 5-8 were considered as poor and good, respectively. Data were analyzed using SPSS version 26.0.

Results: Among the study participants, 64.32% were females while 48.70% were within the 60-70 years age group and 72.4% had education up to G.C.E. O/L. Participant's mean±SD knowledge score was 12.51±3.25, attitude score was 5.28±1.47 and practice score was 6.59±1.29. Among participants, 317(82.1%) had good knowledge, 285 (74.22%) had good attitudes, and 357(92.97%) had good practices. The level of education (p=0.012) and gender (p=0.045) significantly associated with knowledge, however, no associations were found between knowledge and age (p=0.227), residence (p=0.160) and occupation (p=0.190). Attitudes for radiopharmaceuticals differ significantly with respect to age (p=0.009), level of education (p=0.000) and occupation (p=0.002). Gender (p=0.853), age (p=0.177), level of education (p=0.387), residence (p=0.851) and occupation (p=0.238) showed no significant effect on practice. Of the participants 12.5% were not aware that their bodies emit radiation after administration and 14.3% did not isolate themselves from others until specified time.

Conclusion: Knowledge and attitude towards radiopharmaceutical procedures was satisfactory in this target population and the majority had a good attitude towards the role played by healthcare providers. Practices on radiopharmaceuticals were also satisfactory. However, health education should be provided on emission of radiation after administration of the radiopharmaceuticals.

Keywords: *Attitude, Cancer patients, Knowledge, Radiation, Radiopharmaceuticals*

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OP 12

Impact of a Patient Information Leaflet on Improving Knowledge and Practice of Administration of Paracetamol Syrup to Pediatrics among Caregivers in Walasmulla Medical Officer in Health Area

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Background: Even though paracetamol is generally considered safe when used according to recommended doses, studies have identified it as a common cause of unintentional overdoses in children under five years. Studies emphasize the need for educational interventions to enhance comprehension and adherence to proper practices among caregivers regarding the administration of paracetamol in pediatrics.

Objective: To assess the impact of patient information leaflet (PIL) on improving the knowledge and practice of caregivers on the administration of paracetamol syrup in pediatrics

Methods: An educational intervention utilizing a PIL was implemented within the Walasmulla Medical Officer of Health area in Hambanthota district, Sri Lanka. The effectiveness of this intervention was evaluated using pre and post-test questionnaires to measure the impact on participant knowledge and practices. One score was given to each correct response. Scores of pre and post tests were compared for knowledge and practice by paired sample *t*-test.

Results: Two hundred and ninety-five caregivers participated (87.1% females) in this study. Mean±SD age of the participants were 36±8.5 years. There was a significant improvement in knowledge ($p<0.05$) and practice ($p<0.05$) of paracetamol usage of caregivers after the intervention. (Mean difference of scores of pre and post-test, knowledge = 4.793±1.427, practice = 1.396±0.988). Identifying pain (57.6%), fever detection (36.9%) as indications, liver damage as a side effect (58.3%), selecting the standard recommended dose (96.2%), and daily frequency (39.6%) of paracetamol were improved correctly under the knowledge domain. Deciding the correct dosage form (15.6%), determination of correct dose (26.7%) and appropriate storage (42.0%) of paracetamol were improved under the practice domain. In total, 34.2% of participants were encouraged to refer PIL as an information source when deciding dose for pediatrics under five years old. All the participants were aware of using standard measuring devices and measuring cup (96.9%) was the most popular measuring device among them.

Conclusions: The implementation of a PIL has shown to enhance both knowledge and practice of participants. By educating caregivers about selecting the appropriate dosage form and weight-specific dosing, the risk of both overdosing and under dosing paracetamol in pediatric patients can be minimized.

Keywords: *Knowledge, Paediatric caregivers, Paracetamol, Patient information leaflet, Practice*

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OP 13

Enhancement of Penicillin Activity Against Methicillin-resistant *Staphylococcus aureus* (MRSA) with Aqueous Extract of *Mangifera indica* Peel

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Background: *Mangifera indica*, commonly known as mango, is noted for its rich content of natural phytochemicals with significant antibacterial properties. Methicillin-resistant *Staphylococcus aureus* (MRSA) is resistant to numerous antibiotics, including penicillin. This study aims to explore the potential of *M. indica* peel extract in overcoming penicillin resistance in MRSA, highlighting its valuable contribution to antibacterial therapy.

Objective: To evaluate the enhancement of *in vitro* antibacterial activity of penicillin combined with aqueous peel extract of *M. indica*

Methods: The peel extract of *M. indica* was obtained using the maceration technique, followed by phytochemical identification tests. Antibacterial activity was assessed for the peel extract at a 500 mg/mL concentration. The minimum inhibitory concentration (MIC) of penicillin was determined using the agar well diffusion method. The antibacterial activity of penicillin was then evaluated in combination with different concentrations of peel extract (125, 250, 500 mg/mL) and penicillin (MIC/8, MIC/4, MIC/2) against *S. aureus* and MRSA. Distilled water and vancomycin (3 mg/mL) served as negative and positive controls.

Results: Phytochemical analysis of *M. indica* aqueous peel extract revealed the presence of carbohydrates, phenols, flavonoids, alkaloids, saponins, steroids, and tannins. The *M. indica* peel extract (500 mg/mL) alone did not exhibit antibacterial activity against *S. aureus* and MRSA. The MIC of penicillin was established at 0.003 mg/mL. When combined with penicillin (MIC/2), the *M. indica* peel extract (500 mg/mL) significantly enhanced antibacterial activity, yielding inhibition zones of 32.51±0.27 mm against *S. aureus* and 10.30±0.02 mm against MRSA. Statistical analysis using one-way ANOVA and by Tukey HSD Post-Hoc test showed that the results were statistically significant ($p<0.05$).

Conclusion: The combination of aqueous crude extract of *M. indica* peel with penicillin can enhance the antibacterial activity of penicillin against *S. aureus* and MRSA. This suggests a potential strategy for improving the efficacy of penicillin using natural plant extracts.

Keywords: *Antibacterial resistance, Mangifera indica, MRSA, Penicillin,*

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OP 14

Effectiveness of an Educational Leaflet on Knowledge and Attitude of Emergency Contraceptive Methods among Non-medical Female Undergraduates of University of Ruhuna

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Background: Emergency contraceptives (EC) are medications or devices designed to prevent pregnancy after unprotected sexual intercourse or contraceptive failure. Awareness about emergency contraceptives is crucial for individuals to make informed decisions about their sexual health. Young women with non-medical background have less chances to aware about EC compared to those with medical background which make them trouble.

Objective: To investigate the effect of an educational leaflet on the improvement of knowledge and attitude toward ECs among non-medical female undergraduates

Methods: A pre-experimental study was conducted among 383 non-medical female undergraduates at University of Ruhuna, Sri Lanka including 120 students at Faculty of Management and 263 students at Faculty of Technology. The pre and post-evaluation of participants' knowledge and attitudes was conducted following the dissemination of information through an educational leaflet available in both Sinhala and English languages. This leaflet, developed with reference to current evidence and the best clinical recommendations, drew upon resources such as the National Health Service (NHS) website. Analysis was performed using Paired *t*-test and Chi-Square in SPSS version 20.0.

Results: Out of 421 recruited participants, 9.1% dropped out after the intervention. Therefore, the final sample size was 383. The mean±SD age of the participants was 23±1.87 years. Pre-test identified that only 14.4% of the participants did not show acquaintance with the term 'emergency contraception,' while only 40.2% were aware of Intrauterine Devices (IUDs) and Levonorgestrel (LNG) pills as types of EC. Only one-third was knowledgeable about the use of ECs. Demographic variables such as living status and marital status were significantly associated with existing knowledge ($p<0.05$). Of the sample, only 15.25% exhibited a favorable attitude towards the utilization of ECs. After the intervention, a significant improvement of the knowledge score (pre vs post; 12.48±6.83 vs 30.69±6.18 ($p<0.001$) and attitude increased favorably towards EC fourfold compared to pre-test ($p<0.001$).

Conclusion: The educational leaflet led to a noticeable improvement in participants' knowledge on ECs was and an increase in favorable attitudes toward ECs. This study underscores the efficacy of utilizing educational leaflets to enhance awareness and understanding of ECs. Comprehensive education and awareness among young women with non-medical backgrounds are essential to empower individuals to understand their reproductive choices and access appropriate healthcare when needed.

Keywords: *Attitude, Emergency contraceptive methods, Intervention, Knowledge*

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OP 15

Assessment of Knowledge, Practices and Attitudes of Pediatric Caregivers on Household Storage of Oral Liquid Medicines

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Background: Oral liquid medicines are frequently prescribed dosage forms for pediatric patients and the safe use of these medicines is still a major problem. Therefore, it is a timely requirement to assess the awareness of pediatric caregivers on the household storage of oral liquid medicines.

Objective: To assess the knowledge, practices and attitudes of pediatric caregivers in Wariyapola Medical Officer of Health (MOH) services division, Kurunegala district, Sri Lanka on the household storage of oral liquid medicines (OLM)

Method: A descriptive cross-sectional study was carried out on pediatric caregivers in Wariyapola MOH area using a convenient sampling method. Data was collected using a pre-tested questionnaire by the researchers and clinical experts. The questionnaire consisted of socio-demographic data, knowledge, practices and attitudes on household storage of OLM. Likert scale and yes/no questions were used to assess knowledge, practices and attitude. Data were analysed using SPSS version 20.0.

Results: The total number of participants was 405. Of them, 259 (64%) were females. Among the total respondents, 76.8% had a 'favourable knowledge' of household storage of OLM as per their knowledge level. The least attention (80.7%) was towards the 'moisture absorption' of OLM during storage practices. The highest attention (96%) was on the 'expiry date' mentioned in the label. The number of children (p=0.001) and the respondents' educational level (p=0.000) significantly influenced the knowledge. Furthermore, 71.1% of the respondents were willing to participate in awareness programs and 73.6% of the respondents believed it would be beneficial to receive advice from pharmacists on how to properly store OLM.

Conclusion: The knowledge, practices and attitudes of pediatric caregivers on household storage of OLM are not optimal. People should be educated about the correct storage methods and risk of improper storage of OLM at home.

Keywords*: Attitude, Knowledge, Oral liquid medicine, Paediatric caregiver, Practice*

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OP 16

Evaluation of *in vitro* Gastroprotective Activity of an Aqueous Extract of Avipattikar Choorna Used in the Management of Gastritis (Amlapitta)

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Background: Gastritis (Amlapitta) is a highly widespread illness in the modern world. The Avipattikar choorna (AC) is an ayurvedic polyherbal formulation which is used to treat gastritis.

Objective: To evaluate *in vitro* gastroprotective activity of the aqueous extract of AC and formulate a novel tablet dosage form for effective and convenient usage

Methods: The aqueous extract of AC was prepared according to the ayurvedic method. According to that, 60 g of AC was dissolved in 240 mL of lukewarm water, mixed well and filtered using muslin cloth. Four different concentrations were prepared using the aqueous crude extract (C1-108.58, C2-153.90, C3-253.48 and C4-615.06 mg/mL). Tablets incorporating 450 mg of dried powder of aqueous extract of AC were formulated. Three different concentrations (C5-33.33, C6-66.66, C7-100.00 mg/mL) were obtained by dissolving of formulated tablets respectively. *In vitro* gastroprotective activity of AC and formulated tablets was evaluated using the neutralizing effect on artificial gastric acid, neutralizing capacity using the titration method of Fordtran's model and duration of consistent neutralization on artificial gastric acid using Vatier's artificial stomach model. Distilled water and Eno were used as negative and positive controls, respectively. Statistical analysis was performed using One-way ANOVA.

Results: All the tested concentrations of AC and formulated tablets exhibited significant (p<0.05) gastroprotective activity in comparison to negative control. Neutralizing effect of different concentrations of AC, formulated tablets and Eno showed the final pH of C1-3.25±0.00, C2-3.33±0.00, C3-3.55±0.00, C4-3.86±0.01, C5-2.04±0.02, C6- 2.36±0.01, C7-3.07±0.02, 6.31±0.01, respectively. Neutralizing capacity of different concentrations of AC and formulated tablets were C1-0.14±0.01, C2-0.19±0.01, C3-0.28±0.00, C4-3.97±0.03, C5-0.18±0.01, C6-0.36±0.01, and C7-0.52±0.01 mmol, respectively. Eno showed neutralizing capacity of 1.23±0.03 mmol. Duration of neutralization of different concentrations of AC and formulated tablets were C1-188.00±3.05, C2-206.00±1.52, C3-272.33±1.45, C4-321.00±2.07, C5-142.33±5.04, C6-194.66±3.52, and C7-267.66±5.78 sec, respectively. Eno showed the highest duration of neutralization among the tested samples (453.66±2.33 sec).

Conclusion: Both AC and formulated tablets exhibited significantly higher *in vitro* gastroprotective activity. Stability studies are recommended for the newly formulated dosage.

Keywords: *Avipattikar choorna, Fordtran's model, Gastroprotective activity, Vatier's artificial stomach*

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OP 17

In vitro Bioactivities of *Azadirachta indica* (Kohomba) and *Oroxylum indicum* (Thotila)

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Background: Traditional Sri Lankan medicine have been serving as a cornerstone of healthcare for approximately 70% of our rural population. In traditional Sri Lankan medicine, formulations combine multiple plants, with a few main components and others act as supportive agents to enhance their effectiveness. *Azadirachta indica* (AI) and *Oroxylum indicum* (OI) are components of Denabadiya Kasaya, which traditional healers use to treat viral infections.

Objective: To assess the bioactivity of AI and OI bark extracts using *in vitro* bioassays

Methods: Hot water extracts (100°C) of the barks of AI and OI were prepared by boiling 30 g of powdered bark material with 1940 mL of distilled water and condensed to 240 mL. Subsequently, the Total Phenolic Content (TPC) and Total Flavonoid Content (TFC) were determined. Antioxidant activity by 1,1-diphenyl-2-picrylhydrazyl DPPH assay and anti-inflammatory activity by human red blood cell (HRBC) assay were carried out. Finally, cytotoxicity was assessed by (3-(4,5-dimethylthiazolyl-2)-2,5-diphenyltetrazolium bromide) MTT assay at 24 and 120 h, with Vero cells cultured in DMEM complete media at 37°C in 5% CO_2.

Results: TPC of AI and OI were recorded as 15.6 and 20.2 mg/g GAE, respectively. TFC of AI and OI were 40.0 and 15.1 mg/g QE. For DPPH assay, IC_{50} was 0.4 mg/mL for both samples, while standard ascorbic acid showed an IC_{50} of 0.016 mg/mL. HRBC depicted an IC_{50} of <0.0625 mg/mL for both AI and OI, while ibuprofen showed an IC_{50} of <0.0625 mg/mL. Finally, cytotoxicity of AI and OI were recorded as CC_{50} 0.60 and 0.80 mg/mL for 24 h and >1 and 0.62 mg/mL for 120 h.

Conclusions: AI showed a remarkably higher TFC value, while both plant extracts depicted moderate antioxidant activity. Both extracts also showed potent anti-inflammatory activity which can help mitigate the detrimental effects of DENV infection by reducing oxidative stress and protecting host cells. However, among the two plants tested AI showed a slightly high CC_{50} value which might be a more promising candidate for further research as a potential anti-viral therapy.

Keywords: *Azadirachta indica, Bioactivity, Oroxylum indicum*

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OP 18

In vitro Evaluation of Pharmaceutical Stability of Repackaged Chlorpromazine Hydrochloride Tablets in Sri Lankan Health Setting

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Background: Ensuring the stability of pharmaceutical repackaged products is critical, especially in medications, that have the potential degradation against light and oxygen, like chlorpromazine (CPZ). This study may contribute to preserving the stability of repacked CPZ tablets throughout the intended period by evaluating commonly used repackaging materials in Sri Lanka.

Objective: To evaluate the impact of different repackaging materials on the stability of chlorpromazine hydrochloride tablets over a one-month period

Methods: Randomly selected baseline sample (BLS) tablets from an unopened container were subjected to test the weight variation, hardness, friability, disintegration, dissolution, and assay according to British Pharmacopeia (BP) 2022 at the point of collection. Then eight out of ten samples from the remaining tablets were repacked pairwise with an amber-colored glass bottle (B_2, C_2), Low-Density Polyethylene (LDPE) bag (B_3, C_3), paper bag (B_4, C_4), and Dose Administration Aid (DAA) (B_5, C_5). The other two samples were stored in the original container (B_1, C_1) to use as control samples (CS). All samples were stored for 30 days below 30℃. After 15 days (B series) and 30 days (C series), the same tests were performed. Results were analyzed by independent sample *t*-test using SPSS version 25.0.

Results: All the samples complied with the BP, except the hardness test for B_4 and C_4. B_1 and C_1 have not shown any significant difference compared to the BLS. B_3 and C_3 gave significantly different results for the tests carried out except for the hardness test compared to the BLS. B_5 showed a significant difference in the dissolution test (p=0.043) and C_5 in the disintegration (p<0.001) and dissolution tests (p<0.001) compared to the BLS. B_2 did not show significant differences for the tests compared to the BLS or CS. C_2 exhibited a significant difference in the dissolution test (p=0.001) when compared to the BLS and also in both the dissolution test (p=0.010) and assay (p=0.017) when compared to the CS.

Conclusion: Repackaging materials have a discernible impact on the stability of CPZ. However, when stored at temperatures below 30°C for 30 days, they can retain and release the active ingredient within the acceptable range.

Keywords: *Chlorpromazine, Quality, Repackaging, Stability, Tablets*

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OP 19

Antimicrobial Activity of Karanjadi Pratisarana Used in the Management of Chronic Periodontitis and Formulation of an Oral Paste

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Background: Karanjadi Pratisarana is an authentic Ayurvedic formulation used to treat chronic periodontitis by Ayurvedic medical practitioners. In Ayurvedic practice this preparation is used as a paste mixed with honey. However, it is recommended to make a paste mixed with water for diabetic patients.

Objective: To assess the antimicrobial efficacy of Karanjadi Pratisarana and formulated oral paste against gram-positive bacteria, gram-negative bacteria, and fungi that cause periodontitis

Methods: *Terminalia chebula* fruits, *Acacia catechu* resins, *Kaempferia galanga* rhizomes, *Bambusa bambos* crystals, *Pongamia pinnata* root parts, *Mimusops elengi* bark parts, *Azadirachta indica* leaves, cinnamon, talc, detoxified borax and kaolin were dried, ground and sieved. Karanjadi Pratisarana was prepared according to an authentic formula in Ayurveda pharmacopoeia. The antimicrobial activity was determined by the agar well diffusion method. The minimum inhibitory concentration (MIC) value was determined by the pour plate method. An oral paste (15 g) was developed using olive oil (7.78 g), beeswax (1.2 g), carboxymethylcellulose (0.1 g), and pectin (1 g) with herbal preparation (5 g). The antimicrobial activity and the MIC value of the oral paste were also determined.

Results: Both preparations are effective against gram-positive bacteria (*S. aureus* and *E. feacalis*), gram-negative bacteria (*P. aeruginosa* and *E. coli*) and *C. albicans*. There was no significant difference between the zone of inhibition (ZOI) values of herbal preparation and oral paste (p<0.05). Both showed the highest ZOI against *E. feacalis* (25.67±0.21 mm), *C. albicans* (19±0.22), and *E.coli* (15.5±0.22 mm). Both preparations were resistant to *S. aureus and P. aeruginosa* (13.5±0.22, 9.33±0.33 mm, respectively). MIC for *P. aeruginosa* and *C. albicans* was 100 mg/mL. *E. faecalis* and *S. aureus* were inhibited at 300 and 400 mg/mL, respectively. *E. coli* needed more than 500 mg/mL concentration.

Conclusion: This herbal preparation and novel oral paste inhibit the growth of oral microorganisms that cause periodontal disease and have the potential to develop into pharmaceutical products. This is particularly important in mitigating the effects of antibiotic resistance created by allopathic medicines used against periodontitis.

Keywords: *Antimicrobial activity, Chronic periodontitis, Karanjadi Pratisarana, Oral paste*

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OP 20

Antioxidant Properties of Biologically Synthesized Silver Nanoparticles from Water Extracts of *Cordyline fruticosa sp.* Leaves

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Background: The biological synthesis of nanoparticles using plants has gained attention recently, mainly due to its eco-friendly nature. Most phytochemicals and nanoparticles possess antioxidant activity, which can help neutralize harmful free radicals, paving the pathway to develop new and enhanced biomedical applications.

Objective: To compare the antioxidant activity of plant extracts and silver nanoparticles (AgNPs) synthesized using leaves of five varieties of *Cordyline fruticosa*: candy cane (1CC), waihee rainbow (2WR), exotica (3EX), pink cascade (4PC), and pink diamond (5PD)

Methods: AgNPs were synthesized from water extracts using a green approach. Morphology of synthesized 4PC-AgNPs was analyzed using scanning electron microscopy (SEM). The antioxidant activity of water extracts and AgNPs were assessed using 0.16 mM DPPH solution and assays to determine total flavonoid content (TFC), total phenolic content (TPC) and total antioxidant capacity (TAC) were carried out. One-way ANOVA analysis was conducted using MS Excel for the results obtained from each assay and Pearson correlations were calculated using SPSS to establish the relationship between TFC, TPC and TAC.

Results: AgNPs were observed in 1CC, 2WR and 4PC samples. SEM analysis of 4PC-AgNPs revealed spherical nanoparticles with a diameter of about 40-50 nm. TFC, TPC, TAC and percentage DPPH activity of all synthesized nanoparticles at 100% concentration were found to be significantly higher ($p<0.05$) than those of 100% water extracts. All correlation values were close to 1, indicating that all results strongly correlate with each other. The highest correlation of 0.998 was observed between TPC and TAC.

Conclusions: Results confirm that *Cordyline fruticosa sp.* leaves are a potential biomaterial for synthesis of AgNPs with enhanced antioxidant activity. The total antioxidant activity of the AgNPs might have been greatly influenced by the phenolic compounds present in the water extracts.

Keywords*: Antioxidant activity, Cordyline fruticosa, Silver nanoparticles, Water extracts*

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OP 21

Formulation and Evaluation of Antimicrobial Properties of Polyherbal Hair Care Shampoo

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Background: Hair is a vital part in one's personality. Natural shampoos available for individualized hair care, does not give additive effect on dandruff, hair growth etc. Therefore, there is a need of formulating a polyherbal shampoo using ingredients mentioned in traditional medicine system of Sri Lanka with additive hair care effect.

Objective: To formulate a hair care shampoo incorporating selected medicinal plant extracts and investigation of its physical properties, antimicrobial activity, and eye irritability

Methods: *Phyllanthus emblica, Sapindus trifoliate, Hibiscus rosa-sinensis, Ixora coccinea, Datura metel,* and *Chrysopogan zizanioides* were collected and authenticated. Crude aqueous extracts were obtained separately and mixed to a ratio based on the antimicrobial activity of each to obtain combined extract (CE). A shampoo base (SB) was prepared using sodium lauryl ethyl sulphate, sodium chloride crystals, polyquaternium 7, glycerin, and citric acid. Crude extract was added to the SB to prepare the herbal hair shampoo (HHS). The antimicrobial activity of the HHS was evaluated using agar disc diffusion assay against *Staphylococcus aureus*, (ATCC 6571*), Pseudomonas aeruginosa* (ATCC 27853) and *Candida albicans* (ATCC 10231). Physical properties (pH, detergency, foaming stability, percentage of solid content) and the eye irritation level of HHS were determined using standard procedures and Hen Egg Test-Chorioallantoic Membrane (HET-CAM) assay, respectively. One Way ANOVA test was performed using SPSS version 16.0.

Results: The zones of inhibition (ZOI) of the HHS were 16.2±0.2, 9.7±0.8 and 3.6±0.3 mm while ZOI of SB were 31.6±0.2, 0±0.0 and 30.5±0.1 mm against *S. aureus, P. aeruginosa* and *C. albicans,* respectively (p<0.05). The detergency power of HHS was 80.9% and the solid content was 15.2%. The foam height after 5 min was 11.2 cm and the irritation score was zero for HHS.

Conclusion: The formulated polyherbal shampoo has antimicrobial activity against tested pathogens and tested physical properties suggesting its suitability for hair care treatment.

Keywords: *Antimicrobial, Hair care, Herbal, HET-CAM assay, Shampoo*

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OP 22

Evaluation of *in vitro* Antibacterial and Sun Protective Activities of Methanolic Extract of *Phoenix dactylifera* Seeds and Formulation of an Herbal Sunscreen Cream

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Background: *Phoenix dactylifera*, a fruit-harvesting nutrient and therapeutic plant, has been used in drug development and traditional medicine due to its rich nutritional content.

Objective: To evaluate the *in vitro* antioxidant, antibacterial, sun screening, and phytochemical properties of *Phoenix dactylifera* seeds of fruits purchased from the local market in Sri Lanka and formulate an herbal cream incorporating this extract, assessing its physical, sun protection factor (SPF), and antibacterial properties and stability

Methods: The extract was obtained using ultrasonic-assisted methanolic extraction method and analyzed for presence of phytochemicals, antioxidant activity (DPPH assay), antibacterial activity against *S. aureus* and SPF. The required concentration of extract was determined to give an SPF of over 30. Formulations F1 (5%) and F2 (1%) with different proportions of crude were prepared and analyzed for physical stability and SPF over 7 days at room temperature (30±2 ºC). The antibacterial activities of formulations were determined.

Results: Phytochemical screening revealed the presence of several compounds and the extract had low antioxidant activity with an IC_{50} of 24.70±0.08 µg/mL, while ascorbic acid (the positive control) had an IC_{50} of 6.34±0.02 µg/mL. The extract's antibacterial activity produced zones of inhibition (ZOIs) larger than 11 mm at the concentrations of 50, 75, and 150 mg/mL, compared to ciprofloxacin 3 mg/mL (positive control) with a ZOI of 29.43±0.46 mm. The extract showed SPF greater than 30 at 6.0 mg/mL. Over 7 days, both creams remained stable in pH, odor, color, and homogeneity with tolerable changes in SPF. The SPF values of freshly prepared solutions (10 mg/mL) of F1 and F2 were 36.22±0.02 and 33.91±0.03, respectively and on the 7th day, they were 36.96±0.03, 34.57±0.03, respectively. F1 showed moderate antibacterial activity at 50 mg/mL concentration (ZOI = 11.74±0.05 mm).

Conclusions: *Phoenix dactylifera* seed extract demonstrates antioxidant, antibacterial and sun-screening properties. The cream formulations showed promising stability and efficacy, highlighting their potential as natural sun protection products.

Keywords: *Antibacterial, Herbal sunscreen, Phoenix dactylifera, Phytochemical analysis, Sun protection factor*

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OP 23

Evaluation of *in vitro* Anti-inflammatory Activity of *Basella alba* and *Oxalis corniculata* and Formulation of a Topical Gel

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Background: *Basella alba* and *Oxalis corniculata* belong to the family Basellacea and Oxalidacea, respectively. They have a diverse array of natural phytochemicals which possess especially anti-inflammatory activities.

Objectives: To investigate the *in vitro* anti-inflammatory effects of authenticated fresh leaves of *Basella alba*, dried whole plant of *Oxalis corniculata*, combined extracts of these plants, and develop a topical herbal gel formulation

Methods: The study comprised the water extraction of fresh *Basella alba* leaves via sonication and centrifugation, alongside the methanolic extraction from *Oxalis corniculata* whole plant using maceration in 70% methanol. Anti-inflammatory effects were assessed using protein denaturation assay (PDA) and heat-induced hemolysis inhibition assay (HIHIA), with diclofenac sodium and phosphate buffer (pH 7.4) serving as positive and negative controls, respectively. Absorbances were measured spectrophotometrically at 540 and 660 nm in the HIHIA and PDA, respectively. A topical gel was formulated incorporating the two extracts (2% from each), carbopol 940, carboxymethylcellulose, and disodium EDTA. All the formulations were kept at room temperature for 30 days to evaluate the stability.

Results: The PDA demonstrated a positive % inhibition of denaturation with increasing concentrations by *B. alba* (6.55% at 0.0625 mg/mL and 10.88% at 1 mg/mL), the combined extract (7.47% at 0.0625 mg/mL and 11.60% at 1 mg/mL), and diclofenac sodium (11.72% at 0.0625 mg/ml and 21.68% at 1 mg/mL), while *O. corniculata* exhibited better % inhibition at lower concentrations (3.94% at 0.0625 mg/mL) than at higher ones (3.94% at 1 mg/mL). All extracts and diclofenac sodium exhibited positive results for erythrocyte membrane stabilization, with *O. corniculata* showing superior stabilization at lower concentrations (17.63%, 15.61%, 13.01%, 12.17% at 0.0625, 0.125, 0.25 and 0.5 mg/mL, respectively) in contrast to higher ones; notably, at a dose of 1 mg/mL, *B. alba* (22.33%), the combined extract (14.43%), and *O. corniculata* (7.63%) displayed considerable membrane stabilization compared to the positive control, diclofenac (8.73%). However, the linearity of the graphs in these assays was inappropriate to calculate IC_{50} values. Formulated herbal gel was stable for 30 days.

Conclusion: Only the water extract of *Basella alba* and the combined extract showed improved anti-inflammatory properties with increasing concentration.

Keywords: *Anti-inflammatory, Basella alba, Heat-induced hemolysis assay, Oxalis corniculata*

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OP 24

In vitro evaluation of antibacterial and antioxidant activity of virgin coconut oil cold emulsion

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Background: Virgin coconut oil, extracted from fresh and mature coconut kernels through natural or mechanical processes, often without the use of heat and largely avoiding chemical treatments, serves a crucial function in our everyday dietary intake.

Objective: To evaluate the total phenolic content, antioxidant and antibacterial effects of virgin coconut oil and virgin coconut oil cold emulsion

Methods: Total phenolic content, antioxidant and antibacterial effects were evaluated by Folin-Ciocalteu method, 2,2-dyphenyl-1-picrylhydrazyl (DPPH) assay and agar well diffusion assay, respectively. Vitamin C was used as the positive control for the DPPH assay. *Staphylococcus aureus* was used as gram positive bacteria, and *Pseudomonas aeruginosa* & *Escherichia coli* were used as gram negative bacteria. Ciprofloxacin (3 mg/mL) was used as the positive control and normal saline was used as the negative control.

Results: Total phenolic content of the virgin coconut oil was 17.67±1.36 mg gallic acid equivalents (GAE)/g of dry weight of virgin coconut oil. Virgin coconut oil demonstrated potent antioxidant activity with 6.39 mg/mL of IC_{50} value and for vitamin C, 8.85 µg/mL was obtained. The virgin coconut oil (150 µl) showed the highest antibacterial activity against *S. aureus* and *E. coli* with inhibition zones of 10.38±0.03 and 8.93±0.01 mm compare to positive control ciprofloxacin with 27.5±0.75 and 13.44±0.40 mm, respectively. The virgin coconut oil cold emulsion (100 mg/mL) showed the highest antibacterial activity with a 16.85±0.28 mm zone of inhibition against *S. aureus* compare to ciprofloxacin with 36.02±0.81 and 8.58±0.71 mm zone of inhibition against *E. coli* compare to the ciprofloxacin with 15.18±0.53 mm zone of inhibition. Virgin coconut oil and its cold emulsion were not effective against *P. aeruginosa*. The formulated virgin coconut oil cold emulsion exhibited stability throughout the evaluated duration under the specified parameters.

Conclusion: Virgin coconut oil not only holds promise as a natural antioxidant but also as a potent antimicrobial agent, supporting its use in medicinal and nutritional applications.

Keywords*: Antibacterial activity, Antioxidant activity, Virgin coconut oil, Virgin coconut oil cold emulsion*

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OP 25

Development and Evaluation of a Transdermal Patch Containing *Thespesia populnea* Bark Extract

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Background: Transdermal drug delivery is a sustain drug delivery method to treat inflammatory conditions. *Thespesia populnea* plant has been used in Ayurveda to treat inflammatory conditions. Thus, a transdermal patch was formulated as a convenient method to treat inflammation with this plant.

Objective: To develop a transdermal patch containing ethanolic bark extract of *T. Populnea*

Method: The crude ethanolic bark extract was obtained from the Soxhlet extraction. The maximum effective, non-toxic concentration (MEC) was evaluated using Human Red Blood Cell (HRBC) membrane stabilization and brine shrimp toxicity assays. Eleven patch bases (PA1-PA11) were developed by varying ratios of hydroxypropyl methyl cellulose (HPMC) and sodium alginate. Folding endurance, surface pH, thickness and moisture content were evaluated to select the best patch base. The MEC was incorporated to the most stable bases and transdermal patches (TPA) were formulated using solvent casting method. Compatibility between the polymers and the crude extract was investigated using Fourier Transform Infrared (FTIR) spectroscopy. *In vitro* drug release was evaluated for 8 hours. HRBC assay and the brine shrimp assay were conducted for the released samples collected at define time duration. Skin irritation and different physico-chemical properties were evaluated on the TPAs.

Results: The MEC was 5 mg/mL. PA1 and PA3 were selected as the best bases according to the physicochemical properties. TPA1 and TPA3 had a thickness of 0.32±0.01 and 0.39±0.01 mm, pH 6.9±0.5 and 7.1±0.5, and weight uniformity of 0.19 and 0.21 g, with a folding endurance >243 and >260, moisture content of 6.31 and 5.71%, respectively. Both patches were reddish-brown, translucent, flexible and slightly smooth with a faint camphoraceous odor. However, TPA1 showed a steady release kinetics over the release period and revealed a maximum inhibition of 58.48 ± 0.42% after 5 hours, whereas TPA3 did not show drug release over the time. TPA1 did not exhibit any *in vitro* toxicity and no oedema or allergic reactions 24 hours post-application. No phase separation or defects were observed in TPA1 during stability period at room temperature and 45°C.

Conclusion: TPA1 was the most stable transdermal patch that can be optimized in future as a commercial product.

Keywords: *Anti-inflammatory, Novel drug delivery systems, Polymers, Thespesia populnea, Transdermal patch*

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OP 26

In vitro Anti-diabetic Activity of Selected Medicinal Plant Extracts: A Comparison with *in-silico* Studies

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Background: Diabetes mellitus (DM) is considered as one of the fastest-rising chronic metabolic diseases. Medicinal plants and their isolated compounds demonstrate multiple therapeutic benefits against DM. *Gymnema sylvestre* R. Br. (Gurmar, Asclepiadaceae) and *Trigonella foenum-graceum* L. (Fenugreek, Fabaceae) are such medicinal plants with proven antidiabetic activity.

Objective: To analyze phytochemical-target protein interactions via molecular dynamic simulations and validation of findings using *in vitro* anti-diabetic assays

Methods: This study employed constructing a 221-compound library from *G. sylvestre* and *T. foenum-graceum* for virtual screening against α-amylase and α-glucosidase target proteins. Bioinformatic tools facilitated virtual screening, molecular dynamics simulations and ADMETox analysis. The α-amylase and α-glucosidase inhibitory potentials were assessed using 50% EtOH extracts of *G. sylvestre* leaves and *T. foenum-graceum* seeds with acarbose as the reference compound. Total phenolic content (TPC) and total flavonoid content (TFC) were estimated using Folin Ciocalteu and aluminum chloride methods, respectively. *In-vitro* assay results are expressed as mean±SD, analysed using One-way ANOVA with post hoc Tukey's test.

Results: Trigoneoside XIIa (-9.1 kcal/mol), trigofoenoside G (-9.8 kcal/mol) in *T. foenum-graceum* and gymnemasaponin v (-9.7 kcal/mol) in *G. sylvestre* had the most stable binding interaction with the target proteins based *in-silico* studies conducted using the compound library. *In-vitro* assays further revealed that *T. foenum-graceum* seed extract showed the highest α-amylase inhibition (IC_{50} = 12.09±2.13 mg/mL) and α-glucosidase inhibition (IC_{50} = 5.23±0.33 mg/mL). Acarbose exhibited IC_{50} values of 0.0045±0.0002 mg/mL for α-amylase and 1.8±0.61 mg/mL for α-glucosidase. *G. sylvestre* leaf extract had the highest TPC (19.042±0.153 mg GAE/g) and TFC (12.862±0.761 mg Quercetin/g). Significant differences in α-amylase and α-glucosidase inhibition were observed among all plant extracts compared to acarbose (p<0.05).

Conclusions: Trigoneoside XIIa, trigofoenoside G, and gymnemasaponin v were identified as promising candidates for managing diabetes mellitus. Based on the results, 50% EtOH *T. foenum-graceum* seed extract was found as an effective α-amylase and α-glucosidase inhibitor.

Keywords: *Anti-diabetic assays, Bioinformatics, G. sylvestre, Molecular dynamics, T. foenum-graceum*

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Theme: Nursing and Midwifery

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OP 27

Attitudes Towards Implementation of Simulation Based Learning among Nursing Educators in Sri Lanka

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Background: High-fidelity simulation offers an immersive, realistic learning environment by replicating clinical scenarios, including patient interactions and responses. It is used in nursing education worldwide, but data on its implementation in Sri Lanka's nursing curricula is limited.

Objectives: To describe the attitudes towards the implementation of Simulation Based Learning (SBL) among nursing educators in state universities of Sri Lanka

Methods: A descriptive cross-sectional study was conducted among 86 nursing educators from seven state universities in Sri Lanka using the total population sampling method. A pre-tested (on 10 nursing educators) self-administered questionnaire developed by researchers was used to collect data. It consisted of two sections: socio-demographic information and attitudes toward SBL. Participants' overall attitudes were assessed by summing their scores, which were then categorized as either favorable (7-14, 15-21) or less favorable (22-28, 29-35). Data were analyzed with descriptive statistics using SPSS version 27.0.

Results: Majority of the participants were female 83.7% (n=72), age between 31-40 years 39.5% (n=40), and 36.0% (n=31) were senior lecturers. Among the participants, 47.7% (n=41) disagreed that using traditional learning methods are more effective than technology-based education. Out of all, 55.8% (n=48) participants agreed that SBL is effective in understanding complex nursing content. A similar number believed that students will be willing to learn through SBL. Approximately half of the participants, 51.2% (n=44) agreed that using SBL as a teaching method will be effective for their institution. Of the sample, 52.3% (n=45) participants strongly agreed that SBL encourages active student participation. Moreover, 47.7% (n=41) participants strongly agreed that this is the moment to bring a culture modification to implement SBL. Overall, 92.0% of the participants had a favorable attitude. .

Conclusions: Nursing educators in Sri Lanka- state universities have a favorable attitude towards implementing SBL in the nursing curricula, suggesting strong support for its adoption.

Keywords: *Attitudes, Nursing educators, Simulation-based learning, Sri Lanka*

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OP 28

Dialysis Adequacy, and Pre and Post Dialysis Changes in Selected Biochemical Parameters in Hemodialysis Patients Attending the National Nephrology Hospital Polonnaruwa

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Background: Dialysis adequacy is an important aspect to be monitored continuously in hemodialysis patients in order to achieve better prognosis and Quality of Life (QoL). Regular assessment of patients' biochemical profile, including electrolytes and creatinine levels is essential for effective patient care.

Objective: To analyze the dialysis adequacy, and pre and post dialysis changes in selected biochemical parameters in patients undergoing hemodyalysis treatments in National Nephrology Hospital, Polonnaruwa

Methods: A cross-sectional study was conducted including 145 maintenance hemodialysis patients attending the National Nephrology Hospital, Polonnaruwa. Data were collected from medical records, laboratory test reports on serum concentrations of urea, creatinine, sodium and potassium, and via an interviewer-administered questionnaire. Dialysis adequacy of the patients were calculated using the Urea Reduction Ratio (URR).

Results: The study population mostly consisted of males (70.3%), >60 years of age (50.3%), with a mean±SD age of 58±12 years. The majority (77.5%) had a dialysis vintage <2 years and most patients (89.3%) attended for dialysis sessions once in five days. Mean±SD URR of the population was 71±10 and 73.8% of patients had an efficient dialysis session. Mean±SD values of pre-dialysis serum urea, creatinine, sodium and potassium were 112±32, 13±3.9, 142±4 and 5±0.7 mmol/L, respectively. Mean±SD values of post-dialysis serum urea, creatinine, sodium and potassium were 32±15, 4.6±1.9 mg/dL, 141±4 mmol/L and 3.7±0.6 mmol/L, respectively. After dialysis, 76.9% and 79.7% of participants reached normal serum urea and sodium levels. High creatinine and low potassium levels were identified among 96.5% and 43.4% of the patients after hemodialysis. The analysis of paired sample t-test indicated a significant difference between the mean values of pre and post; urea (p<0.001), creatinine (p<0.001) and potassium (p<0.001).

Conclusions: Majority of patients had an efficient dialysis session. Even after dialysis, a significant proportion of the population depicted abnormal levels of creatinine and potassium. Further research should be conducted to analyze the effect of dialysis adequacy, and pre and post dialysis changes on the QoL and mortality of hemodialysis recipients.

Keywords: *Dialysis adequacy, Hemodialysis, Quality of life, Urea reduction ratio*

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OP 29

Cross-cultural Validation of the Sinhala Version of the Attitudes to Aging Questionnaire

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Background: The individual's social and cultural background affects attitudes towards aging. The Attitudes to Aging Questionnaire (AAQ) is a widely used 24-item tool to measure attitudes toward aging among older adults that include three subscales, namely psychological growth, psychosocial loss, and physical change.

Objective: To validate the Sinhala version of the AAQ cross-culturally

Methods: The Sinhala version of the AAQ was cross-culturally adapted following standard methods including forward and backward translations, expert committee review, and pre-testing. The questionnaire was administered among 185 Sinhala-speaking older adults residing in residential care facility homes in Colombo district together with the previously validated WHOQOL-BREF questionnaire. Psychometric properties (internal consistency, convergent validity, divergent validity, and construct validity) were assessed using SPSS version 26.0.

Results: The mean±SD age of the sample was 72.35±6.61 years. Majority (56.80%) were females. Internal consistency measured by Cronbach's alpha for Psychological loss, Psychological growth and Physical change subscales were 0.81, 0.77 and 0.74, respectively. There were significant correlations showed in Pearsons' correlation between AAQ subscales and WHOQOL-BREF domains indicating convergent validity; AAQ psychological loss subscale with physical (r=0.80, p<0.001) and psychological (r=0.90, p<0.001) domains, psychological growth with physical (r=0.89, p<0.001), psychological (r=0.85, p<0.001) domains, physical change with physical (r=0.93, p<0.001), psychological (r=0.79, p<0.001) domains. The mean value for married individuals is significantly higher in psychological loss (32.70±3.60, t=3.96, p<0.001), psychological growth (32.16±3.88, t=3.48, p<0.001) and physical change (32.67±3.50, t=3.30, p=0.001) subscales. Individuals diagnosed with chronic disease conditions also scored significantly higher means for psychological loss (32.95±2.88, t=4.48, p<0.001), psychological growth (32.19±3.72, t=3.06, p=0.003) and physical change (32.83±3.33, t=3.56, p<0.001) subscales showing divergent validity of AAQ. In exploratory factor analysis, KMO=0.703 and the Bartlett test of Sphericity was significant (p<0.001) showing underlying factor structure. Three factors were observed in principal component analysis.

Conclusions: The Sinhala version of the AAQ has sound psychometric characteristics and it is a culturally appropriate and reliable measure to assess attitudes toward aging among older adults in Sri Lanka.

Keywords: *Attitudes to aging questionnaire, Older adults, Sri Lanka, Validation*

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OP 30

Motivations and Expectations of Government Nursing Officers Considering Migration: A Cross-sectional Study in Sri Lanka

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Background: Healthcare system in Sri Lanka has faced a shortage of nurses for last few years. Considering the Sri Lankan population, the World Health Organization recommends to have 88,000 nurses. However, at the moment only about 40 000 nurses occupy the health system in the country. The migration of nurses has significantly aggravated the shortage of nurses, significantly compromising the quality of patient care within the state healthcare system.

Objective: To identify the motivations and expectations of government nursing officers in Sri Lanka who are considering migration

Methods: A descriptive cross-sectional study was conducted among 400 government nursing officers in Sri Lanka, recruited via a network sampling method. A self-administered questionnaire was used to collect data which includes socio-demographic characteristics, motivation, and expectations of nurses planning to migrate. Data were analyzed with descriptive statistics using SPSS version 25.0.

Results: Of the participants, the majority were married (72%, n=286), females (89%, n=357) with a mean±SD age of 32±5 years. Among the participants, 37% (n=149) were educated up to Bachelor's degree and 49% (n=197) have work experience of more than five years. Nearly, 96% (n=384) of the participants stated migration is the best solution for an economic situation whereas the most prevalent motivation for nurse migration was economic crisis (94%, n=374). Other motivations include support for their families (69%, n=274), lack of opportunities for nurses within the country (58%, n=230), and gaining social stability (49%, n=198). Expectations of nurses planning to migrate included a comfortable lifestyle (89%, n=358), increased salary and allowances (83%, n=334), career improvement (80%, n=321), and educational benefits (80%, n=321). Further, 69% (n=277) of participants believed that the government initiatives to minimize nurse migration should focus on ensuring a proper salary scale for nurses.

Conclusions: The study revealed the motivations of nursing officers for migration including salary and compensation reformation; career and educational development opportunities; and advanced healthcare infrastructure while expecting comfortable lifestyle. These implications will be instrumental in mitigating the nurse migration in Sri Lanka.

Keywords: *Economic crisis, Motivations, Nurse migration, Sri Lanka*

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OP 31

Prevalence and Associated Factors of Depressive Symptoms among Informal Caregivers of Patients with Advanced Cancer at the Apeksha Hospital Maharagama, Sri Lanka

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Background: Informal caregivers (ICs) often have many caring responsibilities. They inevitably face unmet needs, neglect themselves, and mostly consider the needs of patients with advanced cancer. Subsequently, they are at greater risk of developing depression due to the heavy burden of caregiving responsibility.

Objective: To determine the prevalence of depressive symptoms and its associated factors among ICs of patients with advanced cancer at the Apeksha Hospital Maharagama

Methods: A convenient sample of 226 ICs was selected in this cross-sectional study. An interviewer-administered questionnaire which included socio-demographic and clinical characteristics was used to collect data. The validated 20-item Center for Epidemiological Studies-Depression (CES-D) scale was used to assess depressive symptoms (DSs); higher scores indicate greater DSs. Descriptive statistics, Chi-square, Pearson correlation, and independent *t*-test were used for data analysis.

Results: The mean±SD age of the ICs was 41.78±14.54 years. Most of the ICs were females (60%), married (72%), and educated up to secondary level (83%). Prevalence of DSs (≥16) was 49%. A significantly higher DSs was reported among females compared to males (20.52±9.65 vs 14.74±3.75) and currently unemployed vs employed ICs (19.69±9.14 vs 16.58±7.02). DSs were significantly associated with caregiver relationship with the patient (χ^2=49.42, $p<0.01$) and caregiving hours/week (χ^2=28.26, $p<0.01$). There was a significant positive relationship between DSs and caregiving period (r=0.16, $p<0.01$), sleeping hours/day (r=0.18, $p<0.01$), self-reported general health (r=0.34, $p<0.01$); negative relationship was found between DSs and emotional strain (r=-0.25, $p<0.01$), social support (r=-0.24, $p<0.01$), family/friends support (r=-0.183, $p<0.01$) of ICs. Further, younger age (r=0.108, $p<0.01$) and female gender (r=0.342, $p<0.01$) of cancer patients were significantly influenced.

Conclusions: Nearly half of ICs reported higher levels of DSs. Caregiving-related variables such as caregiver relationship with the patient, caregiving hours/week, caregiving period and sleeping hours/day significantly impacted on DSs. Providing psychosocial support for caregivers is crucial. Support for caregiving-related activities is greatly needed for ICs. Hence, educational interventions for ICs to improve their knowledge and practice on caregiving are recommended.

Keywords: *Cancer, CES-D scale, Informal caregivers, Depressive symptoms, Sri Lanka*

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OP 32

Causes, Patterns and Medico Legal Implications of Dental-maxillo Facial Injuries in Child and Adult Female Victims Admitted to Three Selected Hospitals in Galle District: A Pilot Study

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Background: Oral-maxillary facial injuries (OMFI) constitute a significant component of multiple body to injuries. The World Health Organization reported that assault or interpersonal violence traumas caused by road traffic accidents (RTA), falls, and assaults. The face is the most vulnerable area of the injuries (IPV) are more prevalent in women. Therefore, it is necessary to identify the medico-legal implications of OMFI.

Objective: To study the causes, patterns and medico-legal implications of OMF injuries in female victims admitted to three selected hospitals in Galle district

Methods: A cross-sectional pilot study was conducted on 150 female victims admitted to three selected hospitals in Galle district. Convenient sampling method was used and data was collected using a specially designed, pre-tested questionnaire including questions to assess demographic details, etiology and injury types. The data was analyzed using SPSS version 28.0.

Results: Out of all participants, 116 (77.3%) were adult females (>18 years) and 34 (22.7%) were children (<18 years). The commonest injury was the abrasions (38.3%) followed by lacerations (31.3%) and contusions (16.2%). The commonest anatomical area was on the frontal region (34.2%) and the least common area for injuries was the lower lip. When the etiology was concerned RTA was observed in 37.3% followed by accidental falls (30.7%) and a few (1.3%) were following animal bites. The majority (64%) of OMF injuries were categorized as non-grievous according to the Penal Code of Sri Lanka. There were significant associations on injury type with age of the victims (p=0.014) and etiology of injury (p=0.007).

Conclusions: This pilot study shows that the commonest cause for OMF injuries was RTA and the commonest area was the frontal region. Educational programmes should be conducted to improve the awareness on road safety and rules will be beneficial to reduce incidence of RTA related OMFI.

Keywords: *Abrasions, Intimate partner violence, Lacerations, Oral maxillory facial injuries, Road traffic accidents*

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OP 33

Nurses' and Physicians' Knowledge and Practices on Infection Control in Managing Patients with Temporary Hemodialysis Catheters

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Background: In nephrology units, infection control (IC) is vital due to the heightened risk for patients with compromised immune systems. Temporary hemodialysis catheters pose infection risks, necessitating stringent preventive measures. Hemodialysis (HD) nurses and physicians play crucial roles in implementing these measures, yet there is evidence of increasing infections among these patients.

Objective: To assess nurses' and physicians' knowledge and practices for controlling infections among patients with temporary hemodialysis catheters

Methods: A descriptive, cross-sectional study was conducted in the HD units, Nephrology-wards, and Intensive-care units at the National Hospital with 86 nurses and, 40 physicians. A self-administered questionnaire was distributed to gather information regarding nurses' and physicians' knowledge and practice towards IC among patients on temporary hemodialysis catheters. Data were analyzed to obtain percentages, frequencies, and relationships using SPSS version 17.0.

Results: In total, 126 surveys were completed by nurses (68.3%), and physicians (31.7%). Compared to nurses, physicians had slightly higher mean±SD scores in knowledge (7.47±2.09 vs 7.6±1.68, p=0.009). Of the total, around 35% of nurses and physicians demonstrated good knowledge. The mean±SD score for nurses' practices was 1.40±0.27, and physicians' scores were higher at 1.55±0.36. A positive correlation between knowledge and practice was found among nurses (r=0.52, p<0.05), but not among physicians (r=-0.16, p=0.47). Practices among nurses was associated with year of experience (p<0.05), while physicians' practice and year of experience was not significantly associated (p=0.696).

Conclusions: The study on infection control among 126 nephrology unit healthcare professionals in nephrology units found that physicians exhibited slightly higher knowledge scores than nurses. Nurses show a positive correlation between knowledge and practice, influenced by years of experience. Conversely, physicians' practices are not significantly linked to experience. According to study findings, increasing nurses' exposure to nephrology units enhances proficiency, leading to improved patient care outcomes.

Keywords: *Hemodialysis, Knowledge, Nephrology nurses, Physicians, Practice,*

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OP 34

Incidence of Post-operative Acute Kidney Injury among Selected Major Surgeries at University Hospital Kotelawala Defence University Sri Lanka: A Pilot Study

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Background: Postoperative acute kidney injury (AKI) is a common complication of major surgeries, potentially progressing to chronic kidney disease and contributing to both short and long-term morbidity and mortality.

Objective: To identify the incidence of AKI among those who underwent major surgeries at University Hospital Kotelawala Defense University (UHKDU), in terms of serum creatinine together with other risk factors

Methods: Extendable pilot study was conducted including 30 patients who underwent major surgeries at UHKDU. The selected major surgeries were Oncological (esophageal, gastrointestinal), non-cardiac, cardiac, abdominal, and gynecological surgeries. Post-operative AKI was defined as an increase in serum creatinine of >0.3 mg/dL within 48 hours according to the Kidney Disease Improving Global Outcomes guidelines. Pre-operative and post-operative serum creatinine levels were measured using a fully automated Biochemical analyzer (ABOTT Architect plus C-4000 Analyzer by Creatinine Jaffe method). Demographic, pre-operative, intra-operative, and post-operative patient information were also recorded.

Results: Mean±SD age and BMI of the patients were 55±18 years and 23.4±6.1 kg/m^2, respectively. The majority (66.6%) of the patients were female. Mean±SD serum creatinine values of the patients before and after surgeries were 0.90±0.41 mg/dL and 0.93±0.49 mg/dL, respectively. Out of 30 patients, 47.0%, 17.0%, 17.0%, 13.0%, and 7.0% underwent abdominal, urological, oncological, neurological, and orthopedic surgeries, respectively. Overall incidence of post-operative AKI was 17% (n=5) consisting of patients who underwent three abdominal, one neurological and one urological surgery. All AKI patients were from open surgical procedures, with a high incidence in older age and female patients.

Conclusions: As AKI is one of the factors that may affect their morbidity and mortality, close monitoring of patients after surgeries is crucial. Further research should be conducted to identify early biomarkers more reliable than serum creatinine for early diagnosis.

Keywords: *Acute kidney injury, Incidence, Major surgeries, Post-operative, Serum creatinine*

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OP 35

Prevalence and Contributing Factors of Gastrointestinal Symptoms among Nursing Officers in Teaching Hospital Karapitiya, Sri Lanka

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Background: Nursing officers in tertiary healthcare face with long duty hours and stress, often leading to unhealthy dietary habits and common gastrointestinal (GI) symptoms. This greatly affects their health and work efficiency, however, research on GI symptoms among nursing officers in Sri Lanka is scarce.

Objectives: To determine the prevalence and contributing factors of GI symptoms and their impact on quality of life (QOL) among nursing officers in a tertiary care hospital in Sri Lanka

Methods: A descriptive cross-sectional study was conducted among 296 nursing officers working at Teaching Hospital Karapitiya (THK). Data were collected on GI symptoms, dietary habits, work schedule, sleep quality and quality of life (QOL) using a self-administered questionnaire. Fifteen GI conditions were assessed in the questionnaire and each participant was given a GI symptom score considering their history of GI symptoms in the past two months. Nurses experiencing >5 GI symptoms were considered as having multiple GI symptoms. The overall prevalence of GI symptoms was calculated based on the GI symptom score, and QOL was assessed using World Health Organization Quality-of-Life Scale (WHOQOL-BREF).

Results: The overall prevalence of GI symptoms among nursing officers was 70% (n=206). Hunger pain (81%) was the most commonly identified GI symptom and acid reflux, constipation and upper GI discomfort also showed 62% of high prevalence. Marital status, skipping meals, caffeine consumption, number of night shifts and sleep quality had a significant relationship (p<0.05) with the GI symptoms. Logistic regression analysis retains skipping meals (OR=0.392) and number of night shifts (OR=0.496) as the main factors contributing to GI symptoms (p<0.05). Further, GI symptoms score was negatively correlated with all four domains (physical, psychological, social and environmental) of WHOQOL-BREF scale (r=-0.298, -0.311, -0.225, -0.254, p<0.01).

Conclusions: The study shows that GI symptoms are highly prevalent among nursing officers at THK which was mainly associated with skipping meals, number of night shifts, caffeine consumption, marital status and sleep quality. Higher levels of GI symptoms have significant negative impact on QOL of nursing officers.

Keywords: *Contributing factors, Gastrointestinal symptoms, Nursing officers, Quality of life*

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OP 36

Effect of Hemodialysis Therapy Education on Fluid Management of Patients with Chronic Kidney Disease: A Single-group Pretest-Posttest Study

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Background: Effective fluid management is necessary to avoid fluid overload problems in patients with chronic kidney disease (CKD) receiving hemodialysis therapy. The goal of hemodialysis patients' customized health education programs is to raise their comprehension of fluid management thereby improving their well-being.

Objective: To assess the effect of health education intervention on fluid management of CKD patients undergoing hemodialysis in Dialysis Units, National Hospital of Sri Lanka (NHSL), Colombo, Sri Lanka

Methods: A single-group pretest-posttest design was employed among 110 CKD patients undergoing hemodialysis therapy. Simple random sampling technique was utilized to select the sample. Data on demographic characteristics, medical history, signs and symptoms indicating fluid overload, and fluid management status were collected using a content validated, interviewer-administered questionnaire. Individual health education sessions were conducted followed by information leaflets shared to remember important home instructions and emphasized the importance of fluid adherence during subsequent visits. The questionnaire was re-administered after the completion of a one-month follow-up period. Descriptive statistics and paired *t*-tests were used in the data analysis.

Results: The majority were males (76.4%) and nearly 50% of patients were in the age group 51-70 years. The results demonstrated that health education had a beneficial effect on fluid management, as evidenced by an increase in overall pre and post-mean scores (50.8±13.51 vs 59.07±13.34, $p<0.001$) where high scores denote lower signs and symptoms and vice versa. There were significant differences between pre and post-test scores obtained for signs and symptoms of fluid overload including shortness of breath, ascites, oxygen saturation, and edema (pulmonary, peripheral, periorbital, facial, leg) ($p<0.05$), indicating the positive impact of health education intervention. Post weight gain of the patients was significantly lower than the pre-weight gain of patients $p<0.001$).

Conclusions: Education intervention has a beneficial effect on fluid management in CKD patients receiving hemodialysis. This study highlights the importance of implementing regular health education interventions to improve the fluid management compliance of these patients.

Keywords: *Chronic kidney disease, Patients, Hemodialysis, Fluid management, Health education intervention*

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OP 37

The Necessity of Establishing an Advanced Certificate Course in Palliative Care Nursing at the University of Ruhuna, Sri Lanka

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Background: Palliative care nursing (PCN) supports individuals with life-threatening illnesses, aiming to improve the quality of life for patients and their families. The demand for education in this field has motivated educational institutes to develop professional courses. A need analysis is required to evaluate the necessity of establishing new courses.

Objective: To assess the necessity of establishing of advanced certificate course in PCN at the University of Ruhuna, Sri Lanka

Methods: A descriptive cross-sectional study was conducted among 220 registered nurses (RNs) selected conveniently working in teaching hospital Karapitiya (THK). A pre-tested, interviewer-administered questionnaire, which included prior education or training experiences on PCN, services, and management related to PCN was used in data collection.

Results: Of the sample 45.2% were aged 31-40 years, 86.6% were females and 55.7% were married. Of the participants, 35.7% had a monthly income between 50 000-74 999 LKR. The majority (67.4%) were diploma holders, with 55.7% having <10 years of experience. Emergency trauma care was the special training received by the RNs (4.5%). Only 11.3% of the RNs had formal additional training on PCN such as workshops and a few hours of training. Most RNs correctly identified PCN aims; improving survival (59.7%), improving QoL of patients and their families (91.4%), providing relief and pain (93.7%), understanding PCN (80.1%), and the role of steroids in improving QoL (48.9%). However, the majority gave incorrect answers for the concept of PCN; increasing the life expectancy of terminally ill patients (59.7%), consultants as ideal coordinators for PCN (87.8%), and necessity for multidisciplinary support (76.9%). Most RNs agreed that PCN offers hope to patients (47.1%) and considered it a basic human right (79.6%). Only 20.4% had an average knowledge of PCN, however, 84.6% had a good attitude toward it. Formal PCN training was significantly associated with the knowledge of PCN (p=0.004).

Conclusion: Limited educational exposure and average knowledge level on PCN suggest the need for a PCN course for nurses that would address the unmet needs of relevant stakeholders who require palliative care in Sri Lankan context.

Keywords: *Educational needs, Experience in palliative care, Palliative care nursing*

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OP 38

Assessment of Prevalence and Risk Factors of Low Back Pain among Nurses Working in District General Hospital, Monaragala

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Background: Low back pain (LBP) is one of the most common health problems worldwide. It is a serious health issue that affects healthcare workers, especially nurses. Gender, age, excessive workloads, heavy lifting, stressful working conditions, and lack of equipment have been identified as causative factors of LBP among nurses.

Objective: To assess the prevalence and risk factors of low back pain among nurses working in District General Hospital, Monaragala

Methods: A descriptive cross-sectional study was conducted among 239 nurses working at District General Hospital, Monaragala. A self-administered questionnaire and validated Oswestry Low Back Pain Disability score were used to collect data. Statistical analysis was performed using SPSS version 25.0, and the Chi-square test was used to identify associations.

Results: The mean±SD age was 39.6±9.45 years. The average work experience was 14.31±9.54 years. Lifetime prevalence of LBP was 64.4% (n=154), the annual prevalence 57.3% was (n=137), and the three months prevalence was 48.9% (n=117), while the one-week prevalence of LBP was 37.7% (n=90). Gender (p=0.010), age (p=0.041), marital status (p=0.000), having children (p=0.000), working experience (p=0.036), working shifts per week (p=0.020), and physical exercise (p=0.044) were significantly associated with LBP. Most of the participants (63.6%) reported taking bed rest to reduce back pain, and majority of the participants (76.5%) reported that bed rest helped return back to normal. Additionally, more than half of the participants (53.2%) were classified as having a minimal amount of functional disability based on the Oswestry Low Back Pain Disability score.

Conclusions: This study emphasises the importance of proactive strategies within healthcare instructions, including ergonomic training, workload management, and fostering a culture of physical well-being. By implementing these measures, the occurrence of lower back pain among nurses can be managed thereby enhancing their overall health and job satisfaction.

Keywords: *District general hospital, Low back pain, Monaragala, Nurses, Sri Lanka*

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Perceptions, Practices and Barriers of Clinical Handover among Nurses at Colombo South Teaching Hospital, Sri Lanka

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Background: Effective clinical handover is crucial for ensuring safe and seamless patient care during nursing shift transitions. Previous studies have shown deficiencies in the clinical handover process.

Objective: To describe perceptions, practices and barriers to effective clinical handover among nurses in a selected teaching hospital

Methods: A descriptive cross-sectional study was conducted among a convenience sample of 256 nurses in Colombo South Teaching Hospital during May-June 2023. A pre-tested, self-administered questionnaire was used to collect data and overall mean perception score was considered as the cut-off for levels of perception. Descriptive statistics and Chi-square test were used to analyse data using the SPSS version 26.0.

Results: The majority of the participants were female (96.5%, n=247), and 72.3% (n=185) were in 20-35 years age group. The majority (64.5%, n=165) had positive perceptions related to clinical handover process particularly in the areas of; the way of delivering information (97.7%, n=250), having opportunity to ask questions (91%, n=233) and the availability of records to clarify information (93.4%, n=239). Majority (77.7%, n=199) reported handing over patients always at the end of each shift, provide information verbally (90.2%, n=231) and bedside handover (74.2%, n=190) were commonly practiced. Patient and family involvement in handover was not widely reported. The main barriers identified included; workload (88.7%, n=227), lack of guidelines (77%, n=197), punctuality (27%, n=69) and interest among fellow nurses (17.6%, n=45). Level of perception of clinical handover is significantly associated with highest education level (p=0.014), experience in current workplace (p=0.042) and previous training on clinical handover (p=0.006).

Conclusions: Nurses had positive perceptions regarding clinical handover, and they generally practice end of shift handover at bedside using verbal communication. However, several barriers were evident. The study highlights the need for standardized guidelines, training programs, and improved information systems to enhance clinical handover practices of nurses.

Keywords: *Clinical handover, Barriers, Nurses, Practices, Perception*

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OP 40

Challenges Encountered by Nursing Officers in Providing Oral Care for Patients at National Hospital Kandy

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Background: Oral health is an integral part of the overall health and well-being. Nurses, as primary members of the healthcare team, are positioned to play a significant role in providing oral care. However, there are significant challenges that prevent nurses to effectively delivering the oral healthcare.

Objective: To identify the possible challenges in providing effective oral healthcare by the nurses at National Hospital Kandy

Methods: This was a descriptive cross-sectional quantitative study conducted at the National Hospital Kandy among 228 nurses who work in medical, surgical and intensive care units. A self-administered questionnaire was used to collect data from the participants. Data were analyzed with SPSS 26.0 version.

Results: This study identified 77.6% (n=156) of nurses faced significant challenges in delivering oral care. Patient-related factors and hospital-administration related factors were the main challenges encountered by nurses. As patient related factors, patients' behaviors and physical limitations (62.18%) were identified. As hospital-administration related factors inadequate access to necessary instruments and materials (48.08%) was a key concern. Additionally, knowledge gaps (37.82%), workload (35.90%), a lack of standardized guidelines (33.33%), insufficient staff (28.21%), limited hospital-provided facilities (26.92%), time constraints (22.44%), perception of expensive oral care equipment (14.74%), lower prioritization of oral care practices (12.82%), and poor supervision (12.18%) mentioned as prominent challenges.

Conclusions: The nurses face patient related, healthcare professional related, and hospital administration related challenges, which restricted them from performing standard as well as effective oral care. Therefore, it is recommended to provide in-service training, awareness programs, standardized protocols, provision of oral care instruments and materials to integrate oral healthcare into routine patient care.

Keywords: *Challenges, Nurses, National Hospital Kandy, Oral healthcare*

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Perceived Nurse-patient Communication Barriers among Nursing Officers at Teaching Hospital Jaffna, Sri Lanka

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Background: Effective communication significantly improves patient care, satisfaction, and adherence to treatment. Studies have highlighted gaps in communication between healthcare professionals and patients, especially across different cultural backgrounds.

Objective: To determine perceived nurse-patient communication barriers among nursing officers at Teaching Hospital Jaffna, Sri Lanka

Methods: A descriptive cross-sectional study was conducted among randomly selected 240 nursing officers at Teaching Hospital, Jaffna. The data were collected using a self-administered questionnaire comprised of socio-demographic characteristics and nurse-patient communication barriers. Data were analysed with descriptive statistics using SPSS version 25.0.

Results: In the sample, male and female representation was equal (50%, n=120) with a mean±SD age of 32±6.5 years. Most of the participants were unmarried (50%, n=120), Hindus (69%, n=166) and educated up to diploma level (65%, n=155). The mother language of the majority of participants was Tamil (79%, n=189) whilst the remaining were Sinhala (21%, n=51). Most prevalent perceived barriers affecting communication among nursing officers include heavy workload (92%, n=220), lack of language proficiency (90%, n=217), shortage of nurses (87%, n=209), inadequate training on communication skills (86%, n=206), lack of privacy (85%, n=204), lack of access to communication tools and technology (82%, n=198), culture and ethical differences (82%, n=198), unfamiliar environments (80%, n=204), and unwillingness of patients to communicate (69%, n=165).

Conclusion: Communication barriers faced by nursing officers are multifaceted stemming from language, culture and working environment. Therefore, addressing these challenges would enhance the quality of patient care.

Keywords: *Barriers, Culture, Language, Nurse-patient communication, Sri Lanka*

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OP 42

Postpartum Depression during the Immediate Postnatal Period among Parents Attending the Lactation Management Centre at District General Hospital, Gampaha, Sri Lanka

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Background: Postpartum depression (PPD) negatively impacts the caring process for newborns and family health. PPD affects 17.22% (95% CI 16.00-18.51) of the global population. However, a very few studies have examined and compared maternal and paternal psychological health during the early postpartum period.

Objective: To assess PPD during the immediate postnatal period among parents attending the Lactation Management Centre at District General Hospital, Gampaha, Sri Lanka

Methods: This descriptive cross-sectional study was conducted at the Lactation Management Centre, district general hospital, Gampaha, using an interviewer-administered questionnaire and a simple random sampling method. The assessment utilized the validated Edinburgh Postnatal Depression Scale (EPDS), a 4-point Likert scale (0-3) questionnaire, to assess PPD. The questionnaire consists of 10 questions, with a potential score range of 0-30. Data analysis was performed using SPSS version 25.0.

Results: The study consisted of 210 individuals. Fathers had an average age of 30, while mothers had an average age of 28. The majority of the participants had studied up to G.C.E. O/L education (fathers: 31.4%, n=66; mothers: 42.9%, n=90). Unemployment rates were 2.9% for fathers and 65.7% for mothers. Most couples (95.7%) were married, with an average family income of 68 786 LKR. Possible, fairly high, and probable PPD were reported among mothers at a higher prevalence compared to fathers (possible: 24.3% for fathers, 5.7% for mothers; fairly high: 20% for fathers, 4.3% for mothers; probable: 11.4% for fathers, 4.3% for mothers). Results indicate that both maternal and paternal PPD were associated with unplanned pregnancy, perceiving the baby as a problem, lack of paternity leave, and insufficient family income ($p<0.05$). Additionally, a significant association was reported between maternal and paternal postpartum depression ($\chi^2=130.57$, $p<0.05$).

Conclusion: Both maternal and paternal postpartum depression are prevalent, highlighting the necessity for tailored support and intervention initiatives for both parents.

Keywords: *Parental mental health, Postnatal period, Postpartum depression,*

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The Impacts of Gestational Diabetes Mellitus on Infants: A Prospective Case-control Study

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Background: Gestational Diabetes Mellitus (GDM) is defined as glucose intolerance of variable degree with onset or first recognition during pregnancy. GDM is the most common medical complication of pregnancy and it is associated with several maternal and fetal complications resulting significant morbidity and mortality.

Objective: To investigate the impact of GDM on various aspects of new-born including birth weight, birth length, ponderal index, head circumference, gestational age, delivery method, and overall health

Methods: A case-control study was conducted on a sample of 240, divided into two groups: a GDM group (n=120) and a non-GDM group (control group, n=120). Mothers and babies were recruited at the well-baby clinics in Galle district (six MOH areas). Data were collected using medical and health records, clinic cards and an interviewer-administered questionnaire.

Results: Infants of the GDM group had higher mean±SD birth weight (3049.50±520.91 g) than non-GDM group (2868.13±380.73 g, p=0.002). Birth length was also higher in GDM (50.98±3.12cm) than non-GDM group (50.20±2.44cm, p=0.031). Ponderal index, head circumference showed no significant differences. GDM group had more macrosomia cases (6 vs. 0, p=0.013). Gestational age was lower in GDM group (265.61±11.12 days) than non-GDM group (269.05±10.69 days, p=0.015). More pre-term deliveries were observed in GDM group (17 vs. 7, p=0.031). No significant association was found between GDM and mode of delivery (χ^2=2.453, p=0.117). GDM group had significantly higher incidences of episiotomies (χ^2=19.902, p=<0.001). Neonatal jaundice (19 vs. 6, p=0.006), heart murmurs (13 vs.1, p=<0.001) and ASD/VSD (10 vs 0, p=0.001) were significantly higher in GDM group. Complication or infections in the first three months were not significantly different between two groups (p=0.098).

Conclusions: GDM is associated with higher birth weights and birth lengths in infants, along with an increased risk of pre-term deliveries. GDM is strongly linked to adverse neonatal outcomes, including macrosomia, neonatal jaundice, heart murmurs, and ASD/VSD. Study highlights challenges in controlling blood sugar levels among GDM patients, emphasizing the need for better management and care to improve the health of both mothers and infants.

Keywords: *GDM, Impacts of GDM, Infants, Macrosomia*

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OP 44

Experience in Handling Systemic Anticancer Therapy among Healthcare Workers at the National Cancer Institute, Sri Lanka: A Qualitative Study

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Background: The toxicity of systemic anti-cancer chemotherapy (SACT) is an inherent property. Although safety measures are effective, wide usage may increase possible exposure and related adverse effects. Exploration of experience handling SACT among healthcare professionals is essential in identifying phenomena.

Objective: To explore the experience of handling SACT among healthcare workers at the National Cancer Institute, Sri Lanka

Methods: Ten focus Group Discussions (FGDs) were carried out among doctors, pharmacists, nurses, nursing supportive staff (attendants) and cleaning personnel representing two FGDs in each occupational category using a semi-structured interview guide. Following the six steps of thematic analysis, data analysis was carried out separately considering the occupational category and the trustworthiness was preserved.

Results: Role in handling, safety measures, occupational exposure, barriers of safety measures and possible exposure and cues to action were common themes derived from separate thematic analyses. The role in handling SACT is specific across profession. Pharmacists reported the highest level of adherence to standard guidelines. The use of gloves and masks is generally common and nurses use chemotherapy-specific personal protective equipment (PPE) during the dilution of drugs. Dermal contact, splashes and needle prick injuries were common routes of exposure. Headache, skin irritation and hair loss were common. Miscarriages were frequently reported among nurses. However, doctors and pharmacists did not report any perceived adverse effects. Less availability of PPE was reported except for pharmacists and doctors. Time pressure, increased patient count and irregular patient admissions were reported among both nurses and pharmacists. Patient-related barriers were also reported among nurses. Except the doctors, all occupational categories were willing to participate in education interventions.

Conclusions: The role in handling SACT is specific across the occupational category. A variety of safety measures are applied in handling SACT. Headache, skin irritation, hair loss and miscarriages are generally reported. Education interventions and minimizing identified barriers of handling SACT are important in enhancing occupational health safety.

Keywords: *Adverse effects, Experience, Healthcare workers, Systemic anticancer therapy*

Theme: Medical Laboratory Science

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OP 45

Optimization of Ultrasonic Assisted Extraction of Bioactive Polyphenols from Wood Waste of *Cedrela toona* Using Response Surface Methodology

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Background: Wood waste is a readily available resource with significant potential for applications in medicine, pharmaceuticals and nutraceuticals due to its abundance of bioactive compounds, particularly polyphenols.

Objective: To optimize a sustainable extraction method using surface response methodology (SRM) to efficiently extract bioactive compounds, including polyphenols from wood waste of *Cedrela toona*

Methods: The ultrasonic-assisted extraction of *Cedrela toona* was optimized using water as a solvent with a three-level Box-Behnken Design of SRM, varying parameters including temperature (30, 50, 70°C), time (15, 37.5, 60 min), and wood-to-solvent ratio (1:10, 2:15, 3:20 g/L) under 15 extraction parameter combinations. Total polyphenolic content (TPC) of the 15 different extracts was assessed using the Folin-Ciocalteu method to identify the polyphenol-rich wood extracts (PRWE). The phytochemicals contained in the PRWE were qualitatively analyzed using standard methods including Wagner's test for alkaloids, glycoside test, ferric chloride test for tannins, flavonoid test, saponin test, Salkowski test for steroids and phenol test. The total flavonoid content (TFC) of PRWE was quantitatively assessed utilizing the aluminum chloride method. The PRWE was investigated employing DPPH free radical scavenging and protein egg albumin denaturation assays with Trolox and diclofenac sodium serving as the positive controls, respectively. Zebrafish embryo assay was employed for the acute toxicity study of PRWE.

Results: The highest TPC was determined to be 17.12±2.46 GAE/g for the optimized extraction conditions of 50°C, 37.5 minutes, and 2:15 g/L. Phytochemical screening confirmed the presence of alkaloids, glycosides, flavonoids, phenols, saponins, tannins, and steroids in PRWE. The TFC of PRWE was 16.58±0.72 mg QE/g of extract. The PRWE exhibited moderate *in vitro* anti-oxidant (IC_{50}; 10.98 ± 0.41 µg/mL) and anti-inflammatory (IC_{50}; 248.95±2.9 µg/mL) properties in comparison to the reference standards, Trolox (IC_{50}; 5.95±0.02 µg/mL) and diclofenac sodium (IC_{50}; 179.95±1.33 µg/mL) used for anti-oxidant and anti-inflammatory assays, respectively. According to the acute toxicity study, median lethal concentration (LC_{50}) corresponding to 50% mortality of PRWE was 16.8±0.9 µg/mL. The results demonstrated that 100% mortality rates at concentrations exceeding 20.00 ±0.63 µg/mL.

Conclusion: An efficient extraction method was successfully optimized using SRM to extract bioactive polyphenols from wood waste of *Cedrela toona*.

Keywords: *Anti-oxidant, Anti-inflammatory, Polyphenols, Surface response methodology*

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Distribution of Serum Creatinine Levels in Pregnant Women with Pregnancy Induced Hypertension

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Background: In Sri Lanka, pregnancy-related hypertension, notably preeclampsia, is a prominent health concern, posing substantial risks to maternal and fetal well-being.

Objective: To determine the distribution patterns of serum creatinine in normal pregnant women and women diagnosed with pregnancy-induced hypertension

Methods: This is a population based, analytical, cross-sectional study. In this study, 34 normal pregnant women (group 1) and 34 pregnant women with pregnancy-induced hypertension (group-2; 140/90 mmHg on two or more occasion and without proteinuria) were enlisted. Serum creatinine levels were estimated using colorimetric Jaffe alkaline picric acid kinetic method. Pre-pregnancy weight and height measurements were taken from the clinical records and the pre-pregnancy BMI values of the women were calculated. Mean serum creatinine levels were compared between group 1 and group 2 by independent sample *t*-test.

Results: The serum creatinine level ranged from 0.38-1.14 mg/dL among the total of 68 women. Mean serum creatinine levels of group 1 and group 2 women were 0.53±0.06 and 0.76±0.17 mg/dL, respectively. A statistically significant difference ($p<0.001$) in the mean serum creatinine levels was observed between the two groups of the pregnant women. The selected women were classified into underweight (<18.5 kg/m^2), normal (18.5-24.9 kg/m^2), overweight (25.0-29.9 kg/m^2), obese (30.0-39.9 kg/m^2) and extremely obese (>40.0 kg/m^2). Majority of the women in group 1, exhibited normal BMI mean±SD (21.95±2.10 kg/m^2) while those in group 2 were overweight (26.88±1.05 kg/m^2) and the differences in mean serum creatinine levels within these BMI groups were not differ significantly ($p>0.05$).

Conclusions: Our study highlights a significant elevation in serum creatinine level among individuals with pregnancy induced hypertension than the normotensive group suggesting its potential utility as a marker for early detection of pre-eclampsia-like pregnancy-induced hypertensive diseases.

Keywords: *Body mass index, Pre-eclampsia, Pregnancy induced hypertension, Pregnant women, Serum creatinine*

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OP 47

Impact of Examination Stress on Blood Cell Parameters among Undergraduates of the Faculty of Allied Health Sciences, University of Jaffna

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Background: Examination stress is a sense of anxiety and tension about facing an examination. University students reported possessing significant stress during examinations which ultimately affects their physical and mental health. Although examination stress was found to be associated with changes in blood cell parameters, the findings were still contradictory among different populations.

Objectives: To evaluate the impact of examination stress on blood cell parameters among the undergraduates of the Faculty of Allied Health Sciences (FAHS), University of Jaffna (UoJ)

Methods: An institutional-based longitudinal study was carried out among 50 undergraduates of the FAHS, UoJ, over two different periods. Male and female undergraduates without a history of cardiovascular disease, thromboembolic events, chronic illnesses, recent trauma or surgery and haematological disorders were included in the study. The first session of sample collection and stress level measurement was carried out one month before the examination on a regular day of academic activities whereas the second session was conducted within two hours after the semester examination. A Perceived Stress Scale (PSS) by Cohen was used to measure the level of stress while EDTA blood samples were used to analyse the blood cell parameters using Sysmex KX-21 (Japan) Hematological Analyzer. Data were analysed by Pearson correlation on SPSS version 18.0.

Results: Among the participants, females were predominant (58%), with a mean age of 24 years. The stress analysis revealed that stress level was elevated during examination by 3.00±4.20 for males and 2.5±1.59 for females. Furthermore, examination stress showed a statistically significant positive correlation with platelet count ($r=0.895$, $p<0.05$) and a statistically significant negative correlation ($r=-0.344$, $p<0.05$) with lymphocyte count although there was no significant influence between examination stress and levels of haemoglobin, hematocrit, neutrophil, eosinophil and monocyte.

Conclusion: Alterations in lymphocytes and platelet counts could be used as markers of examination stress in university students; however, further large-scale studies are recommended.

Keywords: *Examination stress, Blood cell parameters, Undergraduates, Faculty of Allied Health Sciences*

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OP 48

Hendirikka *(Mirabilis jalapa)* Derived Dye: An Alternative Natural Stain for Human Red Blood Cells

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Background: Staining is a vital technique in clinical microscopy that enhances the contrast of cellular elements during morphological examinations. Although synthetic dyes are extensively used in staining biological samples, they were reported to be associated with potential adverse effects on laboratory personnel and the environment. Recent studies have extensively documented the possible usage of plant-derived dyes in staining biological tissues due to their affordability, safety and biodegradability.

Objective: To evaluate the staining potential of a natural dye from *Mirabilis jalapa* on human red blood cells (RBCs)

Methods: This was a laboratory-based experimental study. The magenta colour flowers of *M. jalapa* were collected and cleaned with tap water. Then, they were subjected to drying in an oven at 40°C and ground into a dry powder. 20 g of dry plant material was mixed with 100 mL of double distilled water and incubated at 70°C in a water bath for 4 hours and subsequently at 25°C for 12 hours. The extract was filtered through gauze and centrifuged at 5000 rpm for 15 min. The supernatant was filtered using Whatman No.1 filter paper, evaporated by a rotary evaporator and redissolved in distilled water. A serial concentration of dye solution was prepared and applied for 10 min on blood smears fixed by absolute methanol and observed under oil immersion. The photographs taken by a digital microscope were subjected to intensity measurement using ImageJ version 1.54f and statistically compared with Leishman stain by unpaired *t*-test using SPSS version 18.0.

Results: Results demonstrated that dyes extracted from *M. jalapa* exhibit a staining potential on human RBCs in a concentration-dependent manner. Furthermore, the ImageJ analysis revealed that 80 mg/mL of *M. jalapa* dye has the potential to give optimal staining on RBCs with an intensity of 116.82±0.53, which is almost comparable to Leishman stain (I=116.43±0.29, p=0.151).

Conclusion: The dye obtained from *M. jalapa* demonstrated a staining potential on human RBCs; however, further purification studies are recommended to establish this dye as an alternative natural stain for RBCs.

Keywords: *Mirabilis jalapa, Natural dyes, Plant extract, Red blood cell, Staining*

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OP 49

Comparative Study of Anti-inflammatory Potency and Acute Toxicity Effects of Aqueous Extracts of Roots and Whole Plants of *Alysicarpus vaginalis* (L.) DC. and *Desmodium gangeticum* (L.) DC.

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Background: *Desmodium gangeticum* (Shalparni) and *Alysicarpus vaginalis* (Aswenna) belong to Fabaceae family. Due to the scarcity of *Desmodium gangeticum* in Sri Lanka, indigenous physicians often use *Alysicarpus vaginalis* as a substitute in Dashamoola Ayurvedic medicines.

Objective: To compare the anti-inflammatory potency and acute toxicity effects of aqueous extracts of roots and whole plants of *A. vaginalis* and *D. gangeticum*

Methods: Aqueous extracts were obtained from air-dried roots and whole plants through water decoction. Their anti-inflammatory potency was evaluated by heat-induced red blood cell (RBC) membrane stabilization assay and nitric oxide (NO) assay. To assess acute toxicity, Zebrafish embryo acute toxicity assay was conducted, using mortality percentage as the endpoint measure.

Results: In RBC assay, *D. gangeticum* showed the highest anti-inflammatory potency (IC_{50} 47.86 µg/mL) compared to reference drug, diclofenac sodium (IC_{50} 741.31 µg/mL). In NO assay, reference drug, quercetin (IC_{50} 285.01 µg/mL) outperformed four plant extracts**.** However, according to both assays, *D. gangeticum* whole plant demonstrated the strongest anti-inflammatory potency (IC_{50} 47.86 µg/mL in RBC assay and 2080.03 µg/mL in NO assay). *A. vaginalis* root exhibited the lowest efficacy (IC_{50} 1380.38 µg/mL in RBC assay and 8150.09 µg/ml in NO assay). *D. gangeticum* root had higher potency than *A. vaginalis* root and whole plant in both assays. In acute toxicity testing, 50% ethanol (reference drug) demonstrated 100% mortality whereas all plant extracts showed reduced toxicity. Between plant extracts, *D. gangeticum* root exhibited the lowest toxicity (LC_{50} 3801.89 µg/mL) while *A. vaginalis* whole plant exhibited the highest (LC_{50} 1348.96 µg/mL). Statistical analysis revealed significant differences ($p<0.05$) between plant extracts and reference drugs in all assays.

Conclusions: Comparing IC_{50} and LC_{50} values, it suggests *D. gangeticum* offers better anti-inflammatory potency with lower toxicity than *A. vaginalis*. Therefore, the use of *D. gangeticum* is more suitable than *A. vaginalis*, suggesting that the Sri Lankan practice is not optimal.

Keywords: *Acute toxicity effect, Alysicarpus vaginalis, Anti-inflammatory potency, Desmodium gangeticum*

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Prevalence of Asymptomatic Bacteriuria, Association of Patient-related Factors and Cancer-related Factors in Patients with Cancer, Attending Trail Cancer Hospital, Tellippalai, Sri Lanka

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Background: Cancer is one of the leading diseases in the world. Patients with cancer, especially those immunocompromised, are at a higher risk of infection from untreated asymptomatic bacteriuria (ABU), which can lead to complications such as sepsis followed by death. Understanding the changing bacterial prevalence due to the clinical and socio-demographic characteristics of patients with cancer is very important for optimizing treatments and lowering the risk of complications in this vulnerable population.

Objectives: To determine the prevalence of ABU, and association of patient-related and cancer-related factors in patients with cancer attending Trail Cancer Hospital, Tellippalai, Sri Lanka

Methods: An institutional-based descriptive cross-sectional study was conducted at Trail Cancer Hospital, Tellippalai, Sri Lanka, involving 245 patients with cancer without symptoms of urinary tract infection (UTI). Patients were selected using the convenient sampling technique. Appropriate urine samples were collected and inoculated on CLED media. Pure growth concentrations of $\geq 10^5$ CFU/mL or 10^4-10^5 CFU/mL were considered culture-positive. Relevant biochemical tests were performed to isolate the single organisms according to standard microbiological techniques. An interviewer-administered questionnaire was used to collect data regarding patient-related factors (age, occupation, gender, history of UTI, catheterization and genito-urinary surgery, etc.) and cancer-related factors (cancer type, stage, treatment method, etc.). The data were analysed using SPSS version 20.0.

Results: Among the 245 patients with cancer, 26.5% (n=65) were in-patients (hospitalized patients), and 73.5% (n=180) were out-patients (clinic patients). Of the patients, 55.9% were female, and 44.1% were male, with a mean±SD age of 56±0.73 years. About 8.2% of the total population showed significant bacterial growth. Among the population patients with haematological cancer showed the highest (25%) bacterial growth. A higher prevalence was observed among in-patients (13.85%) compared to out-patients (6.11%). Coliforms were the most frequently isolated bacteria (55%), followed by *Pseudomonas* sp. (15%), Coagulase-negative *Staphylococcus* (15%), *Acinetobacter* sp. (10%), and *Streptococcus* sp. (5%). Patient-related factors such as age [p=0.01; >65 years (60% of patients with ABU)] and 44-65 years (35% of patients with ABU), occupation (p=0.019), and history of previous UTIs (p=0.029) were statistically associated with ABU at a significance level of p<0.05, while none of the cancer-related factors were statistically associated with ABU.

Conclusion: The prevalence of ABU was considerably higher among in-patients than out-patients, with Coliforms being the predominant uropathogen. ABU predominantly affected older individuals with cancer, which could be attributed to weakened immune responses in elderly.

Keywords: *Asymptomatic bacteriuria, Cancer patients, Prevalence, Risk factors, Sri Lanka*

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OP 51

Impact of Intranasal Lead on Subjective Symptoms of Japanese Cedar Pollinosis: A Clinical Study in Fukui, Japan

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Background: About 50% of Japanese population suffers from Japanese cedar pollinosis (JCP) which is the most common seasonal allergic rhinitis in Japan caused by exposure to cedar pollen. This high prevalence together with the reduced quality of life of the patients due to subjective symptoms underlines the importance of understanding how pollen exposure affects JCP. It is well known that Lead (Pb), a common air pollutant can cause and exacerbate symptoms of respiratory allergies. However, there is limited information on specific effects of Pb on JCP and the Pb content in the pollen.

Objectives: To evaluate the effect of intranasal Pb exposure on subjective symptoms of JCP by detecting Pb levels on pollen and epithelial lining fluid (ELF) of JCP patients and control subjects in both preseason and pollen season in 2016 and 2017 at Fukui Hospital, Japan

Methods: A follow-up clinical study was conducted during the preseason and pollen seasons. The study involved 44 patients with JCP and 57 control subjects. Basic information and subjective symptoms were recorded using a questionnaire. Pollen grains were collected and counted using a Durham sampler. ELF and pollen were analyzed for Pb levels using inductively coupled plasma mass spectrometry (ICP-MS). Data were analyzed using descriptive statistics, Chi-squared tests, ANOVA, *t*-test, Spearman rank correlation, and logistic regression.

Results: Mean Pb concentration detected in Japanese cedar pollen was 375 µg/kg. During the pollen season, Pb levels in the ELF of patients were 40% higher than those in control subjects, no significant difference was observed in preseason. Furthermore, Pb levels in ELF showed a positive association with pollen counts from the 4 days prior to hospital visits and also with subjective symptoms.

Conclusion: Increased intranasal Pb levels, partially derived from pollen, may affect symptoms in JCP patients during the pollen season.

Keywords: *Allergic rhinitis, Epithelial lining fluid, Japanese cedar pollinosis, Lead, Pollen exposure*

Note: Part of the data presented in this abstract have already been presented in Japanese language.

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OP 52

Exploring the Therapeutic Potential of Three Hepatoprotective Plant Extracts on Diet Induced Non-alcoholic Fatty Liver Disease, *in vivo* Study

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Background: Non-alcoholic fatty liver disease (NAFLD) is a growing health concern in Sri Lanka and globally. Exploring indigenous remedies like *Osbeckia octandra*, *Atalantia ceylanica*, and *Vernonia cinerea*, used in traditional Sri Lankan medicine for liver disorders, could benefit patients and add value to local resources. However, their potential in treating NAFLD remains unexplored.

Objective: To assess the hepatoprotective potential of *O. octandra*, *A. ceylanica* and *V. cinerea* plant extracts through biochemical analysis in a mouse model of experimental NAFLD

Methods: NAFLD was induced in 25 six-week-old ICR male mice with a High Fat Diet (HFD, orally, for 5 weeks). Then, the mice were divided into 5 equal groups (Group I-V, n=5). Group VI (n=5) was given a normal diet. Group I (disease control) and Group VI (negative control) were orally gavaged with an equivalent volume of distilled water. Groups II, III, and IV were given leaf extracts of *O. octandra*, *V. cinerea*, and *A. ceylanica* (at a dose of 500 mg/kg, orally). Group V was given atorvastatin (5 mg/kg, orally; positive control). Group I-V, HFD was continued during the treatment period. After 5 weeks, the mice were weighed, anesthetized with Isoflurane, and serum was collected via cardiac puncture. Biochemical parameters were measured using a biochemical analyzer. Results were expressed as mean±SEM and analysed by One-way ANOVA using SPSS software.

Results: After five weeks of HFD, the initial average weight of 23.09 g increased to 33.48 g. After 10 weeks, Group I had the highest weight gain (40.9±8.2 g) and elevated serum levels of AST (192.0±12.5 IU/L), ALT (32.6±2.3 IU/L), cholesterol (259.4±37.2 mg/dL), and triglycerides (319.5±73.9 mg/dL). Group VI had the lowest weight gain (27.4±0.8 g) and low levels of AST, ALT, cholesterol, and triglycerides (154.5±1.6 IU/L, 19.9±0.5 IU/L, 81.4±5.8 mg/dL, and 115.4±9.3 mg/dL, respectively). Groups II–V showed reduced levels in all parameters compared to Group I. The *O. octandra* treated group had significantly reduced ($p<0.05$) weight gain (30.2±2.1 g), serum AST (161.8±0.7 IU/L), ALT (18.9±0.8 IU/L), cholesterol (173.4±13 mg/dL), and triglycerides (183.5±17.6 mg/dL), with more significant reductions than other plant extracts.

Conclusion: Among all three herbal plants *O. Octandra* showed a significant hepatoprotective activity against NAFLD. This will shed some light into inventing new therapeutics for NAFLD and value-addition to herbal medicines.

Keywords: *Atalantia ceylanica, High fat diet, Non-alcoholic fatty liver disease, Osbeckia octandra, Vernonia cinerea*

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OP 53

Comparison of Clinical Features and Haematological Parameters along with C-Reactive Protein and Transaminase Levels to Distinguish Dengue Infection from other Febrile Illnesses that Mimic Dengue

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Background: The broad spectrum of clinical manifestations of dengue fever (DF) which mimics other infections, makes it challenging to diagnose it in the early course of disease. Serological tests used in the diagnosis of DF are costly and inaccessible in most hospitals. This study was aimed to identify clinical and laboratory parameters that would help in differentiating DF from other febrile illnesses (OFI).

Objective: To compare clinical features, Complete Blood Count (CBC) parameters, C-reactive protein (CRP), and transaminase levels in patients with dengue infection and in patients with OFIs that mimic dengue

Method: A retrospective cross-sectional study was conducted from January to October, 2023 including 144 patients aged 18 years and older, admitted with fever to teaching hospital, Karapitiya. The diagnosis of DF (n=82) was confirmed by serology. The control group (n=62) included patients whose serology was negative for DF and diagnosed with acute febrile illnesses (fever < 14 days). Clinical features and laboratory parameters were recorded from 3rd to 9th day of infection for both groups.

Results: The study included 82 DF patients and 62 patients with OFIs. Chills and abdominal pain were statistically significant clinical features in patients with OFIs (Chi-square test: $p<0.05$). Among the CBC parameters, the DF group had significantly lower white blood cell (WBC) count, platelet count and neutrophil to lymphocyte ratio (independent sample *t*-test; $p<0.01$). The specific days that had significant differences in the respective parameters of the CBC were also identified. Days 3, 4 and 5 showed significantly low levels of WBC count ($p<0.001$) in DF patients. Neutrophil-to-lymphocyte ratio and platelet count were significantly low on days 4, 5 and 5, 6, 7, respectively in DF patients ($p<0.001$). CRP levels were significantly high in OFI patients while transaminase levels showed significantly high levels in DF patients (Mann-Whitney u-test; $p<0.001$).

Conclusion: This study identified several clinical and widely available laboratory variables to distinguish DF from OFIs. Chills and abdominal pain are among the prominent clinical features identified in patients with OFIs. Among the laboratory parameters, low platelet count, low WBC count, and low neutrophil-to-lymphocyte ratio can be considered critical among DF patients. However, the results obtained need better validation upon reaching a higher sample size.

Keywords: *Clinical features, Complete Blood Count, Dengue fever, Other febrile illnesses, Transaminase levels*

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OP 54

Phenotypic Detection of Carbapenemase Production among Multidrug-Resistant Gram-negative Bacteria Isolated at Teaching Hospital Karapitiya

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Background: Global carbapenem resistance is causing significant treatment failures and raising mortality rates**.** However, there is limited local data on the prevalence of carbapenemase production among multidrug-resistant (MDR) gram-negative bacteria.

Objectives: To determine the prevalence of carbapenem resistance and production of carbapenemase using phenotypic methods of Modified Hodge Test (MHT), Carbapenem inactivation method (CIM) and modified carbapenem inactivation method (mCIM) among MDR gram-negative bacteria isolated at teaching hospital Karapitiya (THK) and to compare the performance of the MHT, CIM with mCIM, which is the reference standard given in the Clinical Laboratory Standard Institute (CLSI) guidelines

Methods: A cross-sectional study was conducted from August to October 2023. MDR gram-negatives were obtained from the Microbiology Laboratory at THK following identification using routine microbiological methods. Consecutive samples from the same patient were excluded. Their carbapenem resistance was tested using the disk diffusion method with meropenem (10 µg), ertapenem (10 µg) and imipenem (10 µg). Carbapenemase production was detected using MHT, CIM and mCIM.

Results: Of all 129 MDR gram-negative bacteria, found during the study period, 65.1% (n=84) were resistant to carbapenem and 2.3% (n=3) showed intermediate resistance. Carbapenem resistance among *Acinetobacter spp*. and *Pseudomonas spp*. were 100% whereas that was 53.4% among *Enterobacteriaceae*. Prevalence of carbapenemase production by mCIM, MHT and CIM were 46.4% (39/84), 34.5% (29/84) and 32.1% (27/84), respectively. Validity of tests were assessed with 95% confidence interval. Sensitivity and specificity of MHT compared to mCIM was 59.0% (43.5%-74.4%) and 87.2% (77.7%-96.8%), the sensitivity and specificity of CIM compared to mCIM was 46.2% (30.5%-61.8%) and 80.9% (69.6%-92.1%). Positive predictive value of MHT and CIM was 79.3% (64.6%-93.8%) and 66.7% (48.9%-84.4%), respectively when compared to mCIM. Negative predictive value of MHT and CIM were 71.9% (60.3%-83.6%) and 64.4% (53.2%-76.6%), respectively when compared to mCIM.

Conclusions: Urgent attempts are required to combat carbapenem resistance in Sri Lanka. In resource-limited clinical laboratories without genotypic detection methods, mCIM is the preferred method for detecting carbapenemase synthesis.

Keywords: *Carbapenem inactivation method, Modified carbapenem inactivation method, Modified Hodge Test, Multidrug-resistant gram-negatives, Phenotypic detection*

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OP 55

Loading Erythrocytes with Insulin and Determining the Intraerythrocytic Concentration and Stability

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Background: Novel insulin delivery methods (IDMs) are needed to evade the inconveniences of current IDMs.

Objective: To load soluble insulin (SI) into human erythrocytes and determine the intraerythrocytic concentration using UV absorptions and the stability of insulin-loaded erythrocytes (ILEs) with time

Methods: A calibration curve for insulin was developed using UV absorption data from a standard dilution series of SI to develop a computerized application (CA) to analyze SI. Blood samples were obtained from healthy volunteers aged 25 to 55 years. Erythrocytes were isolated from the whole blood to identify the optimum NaCl concentration for opening erythrocytes. The erythrocytes were closed after transferring SI. The transferred and loaded SI were determined using the CA. The loading capacity was measured at 10, 20, and 30 minutes. The stability of ILEs was visually assessed every 24 hours since the loading process using a trinocular microscope at 400x magnification. The One-way ANOVA test was done using SPSS version 16.0 to compare the mean values.

Results: The SI showed good liner agreement in the range of 0.2 to 0.8 absorbance at 276 nm (r=0.998), proving a simple and affordable CA. The optimum concentration of NaCl solution was 0.7% w/v to open the erythrocytes, and the optimum concentration of 20 IU/mL SI solution was transferred into the erythrocytes. It was shown that 16.28±0.19 IU, 18.56±0.17 IU, and 19.19±0.05 IU of insulin were transferred into 1.00 mL of erythrocytes after 10, 20, and 30 minutes (p<0.05), respectively. An insulin amount of 6.96± 0.17 IU, 7.27±0.24 IU, and 7.69±0.49 IU related to 10, 20, and 30 minutes of exposure (p>0.05) had loaded into 1.00 mL of erythrocytes. The stability period for ILEs was 72 hours.

Conclusions: The hypo-osmolarity-based insulin loading process successfully loaded enough insulin into erythrocytes. The ILEs have a three-day stability period in a 0.9% NaCl solution under 2^0-8^0 C storage conditions.

Keywords: *Computerized Application, Erythrocytes, Insulin, Stability, UV Absorption*

Theme: Public Health

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OP 56

Prevalence and Associated Factors of Acute Poisoning in Galle District, Southern Province, Sri Lanka: A Cross-sectional Analytical Study

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Background: Acute poisoning (AP) represents a significant public health challenge worldwide, exerting considerable morbidity and mortality burdens. Understanding of patterns over different regions during different time durations is important to take preventive measures to increase the quality of life.

Objective: To determine the prevalence, case fatality rate, and association of socio-demographic factors of AP in the Galle district and to assess the pattern of fatal and non-fatal AP

Methods: Data of all AP admissions and, suicides and homicides following AP from January 1, 2020, to December 31, 2022 were collected from the Indoor Morbidity and Mortality Return (IMMR) system of the teaching hospital Karapitiya (THK) and records available at district Crime Detective Bureau units of the Galle and Elpitiya police divisions, respectively. Data were analysed using SPSS version 26.0 and Microsoft Excel.

Results: During the study period, 1297 individuals were admitted to THK following AP including 671 females (51.7%), while 93 fatal deliberate AP cases were reported in police records with 84.9% of males (n=79). The prevalence was 40.3 per 100,000 population per year (95% CI= 36.8-44.2). The case fatality rate of AP was 8.9% (95% CI=6.6-11.8%). The highest prevalence (22.3/100,000 population, 95% CI=19.7-25.2) and case fatality rate were reported from poisoning with medicaments and pesticides respectively. The highest proportion of AP cases were reported from 11-20 years age group (n=444, 32.1%, 95% CI=30.2-35.2). There was a significant association of poison category with gender ($p<0.05$, $\chi^2=125.9$), age ($p<0.05$, $\chi^2=236.7$), and the individual's outcome; death or alive ($p<0.05$, $\chi^2=250.9$).

Conclusions: The predominant group vulnerable to acute poisoning in the study group was females. Fatal deliberate self-poisoning was more common among males. The 11-20 years age group reported the highest number of AP cases during the period.

Keywords: *Acute poisoning, Case fatality rate, Galle, Prevalence*

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OP 57

Literacy and Stigma of Suicide among Undergraduate Students in Public Universities within the Western Province of Sri Lanka

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Background: In Sri Lanka, university undergraduate students face significant mental health challenges, including stress, anxiety, and depression. Improving mental health understanding can mitigate stigma, yet research on suicide literacy and stigma remains limited.

Objectives: To investigate suicide literacy and stigma among undergraduates in public universities within the Western Province of Sri Lanka, examining their association and identifying socio-demographic influences

Methods: The study employed a descriptive, correlational, cross-sectional design, collecting data from 389 participants aged 18 to 28 years across six public universities: University of Sri Jayewardenepura (31%), University of Kelaniya (19%), University of Colombo (11%), University of Moratuwa (13%), Open University of Sri Lanka (22%), and University of Visual and Performing Arts (3%). Data collection occurred between September and October 2023 using convenient sampling via Google Forms. The Literacy of Suicide Scale-Short Form (LOSS-SF) and the Stigma of Suicide Scale-Short Form (SOSS-SF) were utilized after validating them for the Sri Lankan context. SPSS version 26.0 was used for analysis, applying non-parametric tests due to non-normal data distributions.

Results: Results showed a moderate level of suicide literacy mean±SD (5.67±2.07) with gaps in knowledge about causes, signs, and risk factors. Stigma levels were low (2.53±0.67). Students showed higher approval for the isolation/depression subscale (3.48±0.85) and lower approval for the glorification/normalization subscale (2.17±0.17) of SOSS-SF. A significant weak negative correlation was observed between suicide literacy and stigma (p<0.01, r=-0.197). Health service-related students had higher literacy (p<0.05) and lower stigma (p<0.05) compared to non-health service students. Exposure to suicide or attempts among friends and relatives exhibited reduced stigma (p<0.05) and higher approval of the glorification/normalization subscale (p<0.05).

Conclusions: These findings underscore the need for psycho-educational interventions to enhance suicide literacy and destigmatize suicide, particularly among non-health service sector students. Future initiatives should focus on helping individuals identify suicide risk factors and signs, and research employing larger sample sizes to facilitate comprehensive analysis.

Keywords: *Literacy, Mental health, Suicide, Stigma, Undergraduate students*

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OP 58

Loneliness and Psychological Status among Retired Government Officers in A Selected Area in Matara, Sri Lanka

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Background: Loneliness, characterized by feelings of social isolation and disconnectedness, has been linked to various adverse psychological outcomes, including depression, anxiety, and stress. Among retirees, the absence of workplace interactions and decreased social engagement exacerbate feelings of loneliness, posing risks to their mental health. This aspect has not been studies in Sri Lanka previously.

Objective: To assess the loneliness and psychological status among retired government officers residing in Dikwella area in Matara, Sri Lanka

Methods: A descriptive cross-sectional study was conducted among 348 retired government officers in Dikwella area, Matara district using the stratified random sampling method. Pre-tested self-administered questionnaire was used to collect data including loneliness scale and the Depression, Anxiety, Stress Scale (DASS 21) questionnaire. SPSS version 25.0 was used as the data analysis tool and descriptive (Chi-square) and inferential statistics (correlational analysis) were used to analysis the data.

Results: The majority of the sample were males (58.5%, n=203), with the mean±SD age of 68±9 years. The mean±SD loneliness, anxiety, depression and stress scores were 26.81±8.41, 14.02±7.09, 14.02±7.09, and 14.48±8.53, respectively. According to the DASS total scoring protocol, the mean score was 13.8±6.23. The majority 67.3% (n=234) experienced a low (46.6%), moderate (20.1%) and high (0.6%) degree of loneliness level and only 32.8% (n=114) had no loneliness. Overall, 73% (n=254) of depression, 89.1% (n=310) of anxiety and 65.2 (n=227) of stress reported among participants. There was a significant association and weak positive correlation between the loneliness with depression (p=0.008, 0.141) anxiety (p=0.034, r=0.114) and stress (0.019, r=0.126).

Conclusions: The loneliness, depression, anxiety and stress level of the retired government officers in Matara is high and there was a weak positive correlation between loneliness, depression, anxiety and stress level. These findings underscore the nuanced nature of the psychological experiences of retired government officers and emphasize the need for targeted interventions to mitigate loneliness and its associated mental health challenges.

Keywords: *Anxiety, Depression, Government officers, Loneliness, Retirement, Stress*

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OP 59

Cross-sectional Survey in Designing mHealth Application for Informal Carers of Dementia Concerning Behavioural and Psychological Symptoms

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Background: Informal carers of dementia face challenges in managing behavioural and psychological symptoms of dementia (BPSD). mHealth applications are sustainable solutions to help them. Nevertheless, mHealth applications concerning dementia are not available in Sri Lanka, and little is known about carers' challenges in providing care for BPSD and the use of mHealth applications.

Objective: To assess informal carers' knowledge of dementia, carer burden in caring for BPSD, smartphone availability and perception towards mHealth application information seeking

Methods: A cross-sectional survey was conducted among a convenience sample of informal carers of people with dementia (n=203). They were recruited from three psycho-geriatric and neurology clinics in Colombo. An interviewer-administered questionnaire consisting of socio-demographics, dementia knowledge assessment scale, Zarit Burden Scale (screening version), Neuropsychiatric Inventory Questionnaire, smartphone availability, mHealth experience, and perception towards mHealth applications was used. Descriptive statistics, Pearson's Chi-square and Spearman correlation were computed.

Results: The majority was female (70.4%), with a mean±SD age of 53.04±13.79. The mean dementia knowledge score was 17.60±7.12 out of 50, and 88.7% of respondents experienced a carer burden. The median scores for the BPSD prevalence and BPSD severity were 6 out of 12 and 11 out of 36, respectively. Positive correlations (p<0.001) were found between carer burden with BPSD prevalence (r_s=0.38) and BPSD severity (r_s=0.41). From the sample, 63.5% owned smartphones, and 15% used mHealth to seek health information. The perceived usefulness (83.23%) and perceived convenience (66.99%) of mHealth information-seeking were high. The perceived usefulness was positively associated with knowledge of dementia (χ^2=4.19; p=0.041), smartphone ownership (χ^2=32.54; p<0.001), and readiness to spend time (χ^2=27.47; p<0.001) and money (χ^2=27.46; p<0.001) on mHealth application information-seeking.

Conclusions: The findings highlighted the need for addressing knowledge deficiencies and the burden of informal carers of people with dementia who provide care for BPSD. Carers have the resources and positive perception to use an mHealth application. Smartphone literacy should be further explored.

Keywords: *Behavioural and psychological symptoms, Dementia, informal carers, mHealth, smartphones*

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OP 60

Psychological Impact among Primary Caregivers of Children with Autism Spectrum Disorder at Selected Autism Treatment Centers in Colombo Municipal Area

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Background: Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder characterized by impairments in social interaction, communication and limited habitual activities and interests. Clinical characteristics of this disorder lead to barriers in managing individual, child health and their families. Psychological impact associated with caring is significant and the study field needs to be explored.

Objective: To assess the psychological impact among primary caregivers of children with ASD at selected autism treatment centres in Colombo municipal area

Methods: A descriptive cross-sectional study was conducted among consented primary caregivers (n=105) of children with ASD from three selected autism treatment centres in Colombo municipal area, Sri Lanka. Data were collected using a self -administered questionnaire. Psychological impact was assessed using validated Depression, Anxiety and Stress scale (DASS 21). Data analysis was carried out (descriptive and inferential statistics) using SPSS version 25.0.

Results: The mean±SD age of the primary caregivers was 37.35±8.03 years. The majority of caregivers of children with ASD were mothers (85.7%, n=90). Majority of the participants were unemployed (86.6%, n=91) and lives in an urban area (90.5%, n=95). The mean score for depression, anxiety and stress among participants were 17.87, 11.54 and 23.45 respectively. The highest percentage of primary caregivers had moderate level of depression (45.7%, n=48), anxiety (38.1%, n=40), and stress (48.6%, n=51). Severe depression, anxiety and stress were experienced by 5.7% (n=6), 24.8% (n=26) and 16.2% (n=17) of caregivers respectively. Depression was associated with age (p=0.000), nationality (p=0.049) and residential place (p=0.005). Anxiety was also associated with age (p=0.002), nationality (p=0.012) and residential place (p=0.045) while stress was also associated with age (p=0.000), nationality (p=0.002) and residential place (p=0.014) of the caregiver.

Conclusions: A considerable proportion of primary caregivers experience depression, anxiety and stress associated with caring for children with ASD. Strategies need to be encouraged to enhance the psychological wellbeing of the primary caregivers.

Keywords: *Autism spectrum disorder (ASD), Caregivers, Children, Psychological impact*

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Parental Perspectives on Seizures and Epilepsy in Galle district: A Descriptive Cross-sectional Study

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Background: Parents' attitudes towards childhood seizures and epilepsy differ depending on awareness, emotional impact, stigma, medical experiences, support networks, and everyday life implications. Addressing these characteristics can improve support and education efforts, helping parents to better manage epilepsy.

Objectives: To assess the parental attitudes towards seizures and epilepsy and factors associated among parents or guardians in Galle district

Methods: A descriptive cross-sectional study was undertaken with conveniently selected 250 parents who attended the paediatric neurology clinic at teaching hospital Karapitiya. Data were gathered using an interviewer-administered self-developed pretested questionnaire. The data was examined with Chi-square test and Pearson correlation using SPSS version 25.0.

Results: Of the sample, 14.4% (n=36) were male and 85.6% (n=214) were female parents. Misconceptions persist, with 10.4% (n=26) associating epilepsy with spiritual reasons, 85.6% (n=214) rejecting this idea, and 4% (n=10) uncertain. A minority, 7.6% (n=19), accepts exorcism as treatment, while the vast majority, 88% (n=220), does not, with 4.4% (n=11) uncertain. The stigma associated with isolation has been strongly rejected by 97.6% (n=244), while 2.4% (n=6) are unsure about it. While 88.8% (n=222) rejected hiding the disease from society, 8.8% (n=22) agreed to hide it from society, and 2.4% (n=6) were not sure about it. Similarly, 88.8% (n=222) reject the idea of special schooling for epileptic children, showcasing a strong tendency towards inclusivity and dispelling myths surrounding epilepsy. The majority (57.2%, n=195) feel epilepsy may affect their child's marital life later in the future, whereas 39.6% (n=99) disagree, and a small fraction, 3.2% (n=8) are unsure. Concerns extend to parenthood, with 56% (n=140) thinking their child's capacity for conception could be impaired by epilepsy, while 34.4% (n=86) are not convinced, and 9.6% (n=24) remain uncertain. Educational level has a significant association with parental attitudes towards epilepsy emerged (p=0.034).

Conclusion: The study found that most parents had more positive attitudes regarding affecting their child's epilepsy later in life than negative attitudes, with their education level possibly affecting their thinking.

Keywords: *Epilepsy, Parents, Perspective, Seizures*

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OP 62

Associated Factors for Knowledge on Dementia among Professional Caregivers of Older People at Elderly Care Centers in Jaffna District, Sri Lanka

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Background: Dementia is a common psychogeriatric problem among older people that manifests with progressive memory impairment. Formal caregivers play an essential role in carrying out non-pharmacological treatments and supporting people with dementia. Knowledge of caregivers on dementia symptoms and its risk factors is important for early seeking of help for dementia diagnosis and treatment which eventually results to improve patient's quality of life and vice versa.

Objective: To determine the knowledge and associated factors for dementia knowledge among the caregivers at elderly care centers

Method: This is an institutional-based descriptive cross-sectional study conducted at both governmental and non-governmental elderly care centers in Jaffna district, Sri Lanka from January to December 2023. A total population of 142 caregivers were enrolled conveniently for this study. A predesigned, validated Dementia knowledge assessment tool was used as an interviewer-administered questionnaire to gather data. Chi-Square test was used to check the associated factors for knowledge on dementia.

Results: In this study, response rate was 95.3%. The majority of participants were young adults (71.1%, n=101), married (45.1%, n=64), females (77.5%, n=110), and Sri Lankan Tamil (88.7%, n=126). The majority of the participants did not feel exhausted by the workload (85.2%, n= 121), reported adequate facilities in their institution (97.9%, n=139), satisfaction with current work (95.8%, n=136) and having less than five years of work experience (76.8%, n= 109). Majority of the participants (62%, n= 88) had adequate knowledge on dementia and its symptoms. Statistically significant associations observed with the gender (p=0.016) and race (p=0.007) where female participants and Sri Lankan Tamils had significantly higher knowledge than males and other races.

Conclusion: Majority of the caregivers possess sufficient knowledge about dementia. It is recommended to conduct this study as a generalized study in future, in other parts of Sri Lanka including more participants.

Keywords: *Caregivers, Dementia, Knowledge, Older people*

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OP 63

Effect of Sexual and Reproductive Health Education in Preventing Adolescent Pregnancies among School Teens in MOH Egodauayana (2021-2023)

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Background: The Egodauyana MOH area experienced the highest adolescent pregnancy rates within the Colombo RDHS in 2021, during the COVID-19 pandemic. Adolescent pregnancies have significant health, social, and economic implications. The main reason for adolescent pregnancies is the lack of sexual and reproductive education and knowledge.

Objective: To determine the effect of school sexual and reproductive health education (SSRHE) programs in preventing adolescent pregnancies among school adolescents in the MOH Egodauyana area

Methods: An interventional prospective cross-sectional study was conducted in all secondary schools in Egodauyana MOH area in 2022 and 2023. A special expert panel was convened to develop a comprehensive curriculum for SSRHE. SSRHE programs were delivered by trained medical officers in 12 high-risk schools, targeting students in grades 10 and above. Data on total number of reported teenage pregnancies in each school from 2022- 2023 were collected. SPSS version 25.0 was used to analyse data and Chi-square test was used to find the significance.

Results: In 2021, there were a total of 75 teenage pregnancies, which decreased to 68 in 2022 and further decreased to 42 in 2023, with 38 reported in 2021, 25 in 2022, and only 9 in 2023. Adolescent pregnancies among school children were significantly reduced in 2023 compared to 2021 (p=0.036, CI=95%).

Conclusions: The SSRHE programs implemented from 2021 to 2023 have proven effective in reducing adolescent pregnancies in selected high-risk schools. These results underscore the importance of ongoing investment in comprehensive SSRHE initiatives targeted at adolescents. It is recommended to further strengthen and expand SSRHE programs in schools within the MOH Egodauyana area and outside the MOH area. National policy is a must for SSRHE, requiring collaboration between the health and education ministries.

Keywords: *Adolescent pregnancies, Colombo RDHS, Egodauyana MOH, School sexual reproductive health education*

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Demographic Characteristics and Features of Long Bone Fractures in Children in Southern Province: A Pilot Study

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Background: Fractures in pediatric patients is a significant public health issue. The causative factors for long bone fractures (LBF) are accidental or non-accidental in nature. In children, even minor falls can result in fractures thereby difficult to identify the etiology.

Objective: To identify the demographic characteristics and features of LBF in pediatric patients from selected hospitals from Southern province

Methods: A cross-sectional study (pilot study) was conducted among conveniently selected 100 children who are admitted to three selected hospitals in Southern province. A pre-tested questionnaire was administered and data were analyzed using SPSS 28.0. The Chi-square test used for analyzed level of association.

Results: Children's age range was between 2 months-18 years. Most of them (55%) were between 7-13 years. Seventy-six were male children. Majority had simple fractures (93%). The commonest fracture site (39%) was the humerus and when the shape of the fracture was considered the majority (44%) had greenstick fractures and only 2% had spiral fractures. The common causes for LBF were accidental falls (70%) followed by RTA (17%) and sports (3%). Left site of the body is common site for LBF (53%). Male children (42%) significantly more likely to have fractures in humerus (p=0.032) and female have in radius (33.3%). Significantly male children (p=0.003) are more like to have greenstick fractures (49.3%) and female children (p=0.004) have transverse fractures (52%). While the 7-13 age of participants was significantly associated with greenstick fractures (p=0.026) and female gender of participants was significantly associated with accidental fall (p=0.049).

Conclusions: The overall occurrence of LBFs among paediatric participants are common among males (76%). The LBF was common in humeral bone and the commonest type is greenstick fracture following an accidental fall.

Keywords: *Comminuted fractures, Demographic characteristics, Greenstick fractures, Humeral bone, Long bone fractures*

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OP 65

Attitudes towards Antidepressants and Supportive Psychological Therapies among Patients with Mild to Moderate Depression: A Descriptive Cross-sectional Study

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Background: Depression is a significant global mental health concern and both medicines and psychological interventions are used as treatment options. The attitudes of the patients on their treatment plays a crucial role in determining the success of the treatment outcomes.

Objective: To determine attitudes towards antidepressants and supportive psychological therapies among patient with mild to moderate depression

Methods: Data were collected, using a convenience sampling method, from adult patients (n=265) treated for mild to moderate depression at the Teaching Hospital Karapitiya and District General Hospital Embilipitiya. An interviewer-administered questionnaire with twenty statements rated in five-point Likert scale was used to assess attitudes about, antidepressants and supportive psychological therapies. Attitude score was calculated for both treatment modes and a score of $\geq$31.5 was considered as positive attitude about the treatment options. The questionnaire was validated by two psychiatrists, and reliability analysis was conducted using Cronbach's alpha.

Results: The study included 265 Sinhalese participants, 85.7% of whom expressed positive attitudes towards supportive psychological therapy. Females accounted for 54.3% of the participants, with significant representation in the 20-29 and 40-49 age ranges, demonstrating diverse demographic inclusiveness. Approximately 90% (n=238) of the participants agreed that supportive psychological therapies provide a personalized approach in treating depression and it offers a holistic approach to improve not only depression but also the overall mental well-being. However, only 10.9 % (n=29) had positive attitudes towards antidepressants. Approximately 74% (n=195) of respondents were concerned about potential withdrawal effects upon discontinuation of the medication, while 49.5% (n=131) were concerned about potential side effects and long-term consequences.

Conclusions: The study showed that the majority of patients with mild to moderate depression have positive attitudes towards supportive psychological therapies. Potential side effects and withdrawal effects on discontinuation of medications were the significant negative attitudes about antidepressants.

Keywords: *Antidepressants, Attitudes, Depression, Sri Lanka, Supportive psychological therapies*

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OP 66

Knowledge on Sexual and Reproductive Health among Pregnant Women and Spouses During Antenatal Period in Katana Medical Officer of Health Area

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Background: Knowledge of sexual and reproductive health during pregnancy is an important aspect which affects the physical and mental health of pregnant mothers and spouses. Sexual relationship is changed during pregnancy due to the psychological backwardness of couples and fear of having a negative impact on the baby. Therefore, it is important to assess the knowledge of sexual and reproductive health during the pregnancy period.

Objectives: To assess sexual and reproductive health knowledge of pregnant women and spouses during antenatal period in Katana Medical Officer of Health (MOH) area

Methods: A descriptive, cross-sectional study was conducted in nine antenatal clinics at Katana MOH area from May to July 2023. A pre-tested interviewer-administered questionnaire was used to collect data. The knowledge level was assessed with 11 questions and categorized the level of knowledge as: 0-3 poor, 4-7 moderate, and 8-10 good. Data was analyzed using SPSS. Descriptive statistics and Chi-square test were used to analyze data.

Results: The study was conducted among 206 couples. The mean±SD age was 29.5±4.47 years. Majority were Sinhalese (89.1%). Approximately one fourth of the participants (25.5%) had formal education up to Ordinary Level and 44.9% of pregnant mothers were in their third trimester. According to the findings, 67.7% believed that engage in sexual activities during pregnancy is a safe practice and 87.6% thought sexual activities were beneficial in pregnancy. The majority of the mothers and spouses (63.1%) were unaware of the suitable trimester for vaginal intercourse. Out of all, 71.84% of couples had a moderate level of knowledge of sexual and reproductive health. The leading information source for the participants was public health midwives (88.6%). The knowledge level of the participants was not significantly associated ($p>0.05$) with any demographic characteristics of the participants.

Conclusion: The knowledge of sexual and reproductive health among pregnant women and spouses was 'moderate'. The study recommends strengthening sexual and reproductive health education during the initial visits to the MOH centers.

Keywords: *Antenatal, Knowledge, Pregnant women and spouses, Reproductive health, Sexual health*

Poster Presentations

Theme: Pharmacy and Pharmaceutical Sciences

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PP 01

Evaluation of *In-vitro* Antibacterial and Antifungal Activities of Crude Extracts of *Heteropogon contortus* and Formulation of an Antibacterial Cream

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Background: Scientists are exploring plants and their components to develop novel therapeutic agents with antimicrobial activity. *Heteropogon contortus*, a plant belonging to Poaceae family has demonstrated antibacterial, antioxidant and antarthritic properties.

Objectives: To evaluate the *in vitro* antibacterial and antifungal activities of the crude extract obtained from whole plant of *H. contortus* and the development of a topical anti-bacterial cream

Methods: The whole plant, authenticated by research institute, Nawinna, was used to obtain the methanolic extract of *H. contortus* and the phytochemical compositions were examined as per the standard protocols. *In vitro* antibacterial potential was examined against *Escherichia coli* (ATCC 25922) and *Staphylococcus aureus* (ATCC 25923) and antifungal potential was examined against clinical isolate of *Candida albicans* by well diffusion assay. Concentrations of 50, 100, 200 and 400 mg/mL of the extracts were tested. Ciprofloxacin (3 mg/mL) and fluconazole (1 mg/mL) were used as positive controls for antibacterial assay and antifungal assay, respectively. Methanol was used as a negative control for both assays. Finally, the plant extracts were incorporated into a cream base to formulate a herbal cream and the stability was tested.

Results: Phytochemical tests revealed the presence of alkaloids, flavonoids, phenols and carbohydrates in the crude extract. The highest antibacterial activity was shown at 400 mg/mL against both *S. aureus* and *E. coli* with inhibition zones of 13.00±0.00 mm and 12.50±0.71 mm, respectively and it was used for the cream formulation. Inhibition zone of negative control and positive control were 4.00±0.00 mm and 36.00±0.00 mm, respectively. The tested concentrations of the plant extract showed zero inhibitory activity against *C. albicans*. The formulated cream possessed acceptable stability under the parameters of pH, physical appearance, color, odor, homogeneity and phase separation.

Conclusions: The methanolic extract of *H. contortus* whole plant possesses antibacterial activity against both *S. aureus* and *E. coli* and no inhibitory activity against *C. albicans.* Further researches are recommended to study the antibacterial activity of the developed novel topical cream formulation.

Keywords: *Antibacterial activity, Heteropogon contortus, Herbal cream*

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PP 02

A Food Recommender System for Type 2 Diabetic Patients using Singular Value Decomposition

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Background: Diabetes mellitus affects insulin production or response and causes high blood sugar levels. Personalized health/wellness recommendations are indispensable in world and are provided by health recommender systems such as Singular Value Decomposition (SVD).

Objective: To create a food recommender system for type 2 diabetic patients using SVD

Methods: A questionnaire was designed with a validation process to obtain the information of the participants in the interview, following a comprehensive literature review. A total of 917 patients, at Matugama district hospital were selected using a random sampling method, and a complete dataset containing fasting blood sugar (FBS) level, age, gender, weight, height, and preferences for 50 diabetic-friendly food items (for Sri Lankan meal style) were obtained through a literature review and consultation with a nutritional expert. Data were collected using direct patient interviews and from data available in the literature. The SVD technique recommended food items based on the Cosine Similarity Metric and user-based Collaborative Filtering. Most similar patients to a particular patient were identified, and the highest-rated food items were ranked considering the glycemic index and glycemic load. The system was implemented using the Python programming language, with essential libraries such as NumPy and Pandas being leveraged and Mean Absolute Error used as validation metric.

Results: Patients were assisted in achieving their blood glucose targets and the risk of unexpected blood spikes and dips was reduced. Nutritional foods with low glycemic index and glycemic load were recommended by the system based on FBS level and ratings given by patient for foods. A specific cut-off FBS level of 126 mg/dL or higher is used to tailor recommendations. The ability to handle a new patient is also incorporated and prediction accuracy of system was 89%, demonstrating its strength and reliability in providing personalized dietary suggestions.

Conclusion: The SVD systems can be implemented to recommend food items for type 2 diabetic patients, improving their adherence to dietary guidelines and managing their blood sugar levels effectively. It is recommended for further modifications promoting the commercialization of health informatics.

Keywords: *Diabetes mellitus, Health recommender system, Personalized dietary, Recommendations, Singular value decomposition, User-based collaborative filtering*

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PP 03

Assessment of Drug-related Problems in an Oncology Unit of a Tertiary Care Hospital in Sri Lanka: A Cross-sectional Observational Study

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Background: Incidents of drug-related problems (DRPs) in oncology units are common due to polypharmacy and comorbidities. Additionally, the use of highly toxic medications for cancer treatment increases the severity of such DRPs. Clinical pharmacists' interventions in oncology units can contribute to optimising drug therapy by identifying and resolving DRPs.

Objectives: To identify DRPs in the inward medication lists of patients in an oncology unit and classify them using a standard approach

Method: A cross-sectional observational study was carried out from July to September 2023 in the oncology unit of National Hospital Kandy by a trained student pharmacist under the guidance of experienced clinical pharmacy educators. Patients diagnosed with cancer and ≥ 18 years were recruited using convenient sampling. Patients who were diagnosed with psychological conditions, and with communication difficulties were excluded from the study. A comprehensive medication history was obtained following written and verbal consent from the participants. Patients' inward medications from bed head tickets were reconciled and reviewed. DRPs were detected by this process were classified according to the PCNE V9.1 classification.

Results: Seventy-four cancer patients were recruited and (20, 27.02%) of them had at least one DRP. The majority of DRPs were caused by inappropriate combination of drugs (10, 45.45%) followed by communication errors and poor medication adherence (8, 36.36%) untreated symptoms or indications (1, 4.54%) adverse drug events (1, 4.54%) incomplete drug treatment (1, 4.54%) and drug unavailability (1, 4.54%).

Conclusion: A considerable number of DRPs were identified and classified by the student pharmacist in the inward medication lists of oncology patients, highlighting the importance of identifying and correcting these issues. The findings underscore the necessity for targeted interventions to improve drug therapy outcomes in oncology patients and future studies on clinical pharmacy interventions to enhance the patient safety and treatment efficacy.

Keywords*: Clinical pharmacy services, Drug-related problems, Medication reconciliation*

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PP 04

Comparison of Pesticide Residues on *Camellia sinensis* (Tea) and *Justicia adhatoda* (Adhatoda)

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Background: Although processed tea offers numerous nutritional benefits, it may contain pesticide residues due to the excessive use of pesticides in tea plantations. As a result, tea as a drink may adversely affect the human health. Therefore, it is important to find a suitable non-toxic substitute for tea that replicates the full range of nutritional compounds found in tea. In this regard, Adhatoda could serve as a potential substitute, as it contains a similar nutritional profile and requires no pesticides for plantations.

Objective: To compare the content of pesticide residues on *Camellia sinensis* (Tea) and *Justicia adhatoda* (Adhatoda)

Methods: Properly shade-dried, blended Adhatoda leaves and 10 commercial tea samples from Sri Lankan market were taken for the analysis of pesticide residues. The analysis (EN 15662:2018) was done using Liquid Chromatography system (Agilent 1260 INFINITY II) coupled with Tandem Mass Spectrometer (LC-MSMS), Agilent 6470LC/TQ. Agilent ZORBAX Eclipse Plus C18 (2.1x150 mm, 3.5-Micron) column was used for separation. The scan results were evaluated with 246 pesticides in the database.

Results: Eight tea samples out of 10 showed the presence of pesticide residues at ppm level (0.071-0.176 ppm). The identified pesticides include 2-methyl-4-chlorophenoxyacetic acid (MPCA), Diuron, profenofos, teboconazole, chlorpyrifos, propiconazole, and fenbuonazole. MCPA was detected in 5 tea samples. Diuron was detected in 4 tea samples. Both MCPA and diuron were detected in two tea samples. Pesticide residues were not detected in Adhatoda.

Conclusions: The Majority of tea samples indicated the presence of pesticide residues. Some of the detected pesticides in tea samples exceed the maximum residue limit accepted by Sri Lankan tea board standards (>0.1 ppm) and considered as not suitable for human consumption according to European Union regulations. Adhatoda, contain high nutritional value such as tea and free of pesticide residues compared to tea.

Keywords: *Camellia sinensis (Tea), EN 15662:2018, Justicia adhatoda (Adhatoda), Pesticide*

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PP 05

Indian Impact on Surgery in Sri Lankan Traditional Medicine: Reviewing from Archaeological and Historical Records

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Background: Mihintale ancient hospital situated in Anuradhapura area is considered as the earliest ancient Hospital in Sri Lanka. It provides the facts regarding the status of Sri Lankan traditional medical system in Anuradhapura period. Interaction of Sri Lanka with India is continued from early period in many ways such as politically, culturally and religiously etc. Many people claim that Sri Lankan traditional medicine is an independent and unique medical system practiced in Sri Lanka. However, various resources showcase the interconnection between its specialties and various Asian medical systems.

Objective: To evaluate the Indian collaboration on Surgery in Sri Lankan traditional medicine through archaeological and literary evidence

Methods: A survey was carried out using archaeological artifacts and chronological evidences including literature sources.

Results: Fourteen edicts and other two separate edicts of inscriptions of king Asoka (273 – 232 BCE) is considered as the first archaeological evidence regarding medical influence of India on Sri Lankan traditional medicine. The Mahavamsa, a meticulously kept Sri Lankan historical chronicle, documented the political relationship with King Devanampiyatissa (247-207 BCE), who ruled Sri Lanka parallel to King Ashoka. Influence on Sri Lankan Traditional Medical System can be found in it. Surgical instruments have been found at Mihintale and Alahana Pirivena ancient hospital sites situated in Sri Lanka resembling features of Yantra and Shastra described in *Susruta Samhita*. A Sri Lankan traditional medical text *'Sarartha Samgrahaya'* by King Buddhadasa (341-370BCE), with its chapter on *'Shalya Chikitsa'* and surgical instruments similar to *Susruta Samhita*, adds another layer to the evidence of Indian influence on surgical practices in Sri Lanka.

Conclusions: These archaeological and historical records prove the development of the Sri Lankan medical system as a part of the medical system in ancient India and regional impact on surgical practice in Sri Lanka, although it has its distinct features unique to the existing continent.

Keywords: *Archaeological record, Regional interaction, Traditional medical system, Written record*

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PP 06

Physiochemical, Functional, and Sensory Properties of Soy Milk in Compared to Full Cream, and Skimmed Milk in Instant Tea Powder

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Background: Plant-based milk including soy milk, is a fast-growing trend in the dairy industry. The global instant tea powder (ITP) market is getting recognized as a convenient beverage solution. However, ITP with plant-based milk has not evolved considerably.

Objective: To compare the physiochemical, techno and bio-functional, sensory properties, and microbial quality of freshly prepared soy milk ITP with full cream milk and skim milk ITP using standard methods

Methods: Soy milk was prepared using soybeans. Homogeniser was employed in the fat standardization of cow milk. Proximate composition (moisture, fat, protein, % total carbohydrate), other physiochemical properties (solid non-fat content, color, pH, titratable acidity, water activity, viscosity, specific gravity), techno-functional properties (bulk density, tapped density, flowability, wettability, insoluble index, solubility), total phenolic contents and microbial quality of spray dried ITPs were evaluated by standard methods. The Fourier transform infrared spectroscopy (FTIR) was performed to determine compositional variations among samples. Sensory analysis was performed using 30 untrained panelists.

Results: The results demonstrated the protein percentage was highest in soy milk ITP (57.12±0.02) followed by skim milk ITP (21.34±0.03) and full cream ITP (13.64±0.03). The fat percentage of soy milk ITP (3.22±0.01) was significantly lower compared to full cream ITP (13.19±0.11). Soy milk ITP had the highest viscosity (11.53±0.13 cP), highest titratable acidity (0.13±0.01), and lowest pH (6.11±0.11) values. Among the three samples, overall sensory acceptability was highest in skim milk ITP, and remain samples did not show a significant difference. Soy milk ITP showed the least preference for aroma, taste, and aftertaste. FTIR analysis showed the main compounds of all three samples are almost similar. The total phenolic content of soy milk ITP was the highest (25±0.59 GAE mg/100g). Best rehydration properties were observed in full cream milk ITP followed by soy milk ITP. These properties were improved by mixing whole milk powder with soy milk powder. The microbial counts of the powders were within acceptable limits.

Conclusions: Soy milk can be utilized to formulate ITP as a healthy alternative to full cream and skim milk ITP. The techno-functional properties can be enhanced by mixing soy milk with full cream milk powders.

Keywords: *Instant tea, Full cream milk powder, Skim milk powder, Soy milk powder, Spray drying*

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PP 07

Comparison of Antibiotic Susceptibility Patterns in Carbapenem Resistant Gram-Negative Bacteria by Disc Diffusion and Automated Testing Methods

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Background: Rapid and accurate identification of carbapenem resistance is a need, to reduce the burden of emergence and spread of carbapenem resistant Gram-negative bacteria (CR-GNB).

Objective: To compare the carbapenem susceptibility results by Clinical Laboratory Standard Institute disk diffusion method (DDM) and Minimum Inhibitory Concentration (MIC) by BD Pheonix™ automated system (PAS)

Method: A descriptive cross-sectional study was conducted from January to December 2023 in University Hospital Kotelawala Defence University and Apeksha hospital to identify CR-GNB from urine specimens received to microbiology laboratories, by both DDM and PAS. Organisms were identified by biochemical tests and PAS while antibiotic susceptibility testing was performed by DDM and PAS. Inter-rater agreement, Very Major Errors (VME), Major Errors (ME) and Minor Errors (MiE) for imipenem and meropenem were calculated. Descriptive statistics were analyzed by SPSS version 25.0.

Results: A total of 100 urinary CR-GNB were included. Organisms were identified up to the genus level by biochemical tests where Coliforms were the commonest genus while, PAS identified *Klebsilla pneumoniae* as the commonest species. AST results of meropenem and imipenem were reported for all isolates in DDM while PAS reported for 96 isolates as the taxonomy data of four organisms were not available. The PAS and DDM results showed a good inter-rater agreement for both imipenem (p=0.00, k=0.70) and meropenem (p=0.00. k=0.70). Though, VME rate of meropenem (0.00%) was acceptable, imipenem was beyond the acceptable level (2.08%). No ME were reported in both carbapenems while, MiE were equal (2.08%).

Conclusion: Findings emaphazise the compatibility of PAS and DDM in detecting CR. Although, vigilance is necessary for VME rate of imipenem. Further analysis should be performed to identify specific factors like unclear assessment criteria and differing interpretations. However, species identification by automated system will be helpful in early identification of outbreaks.

Keywords: A*ntibiotic resistance, Automated test method, Carbapenem resistant bacteria, Disk diffusion, Error rates*

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PP 08

Development and Evaluation of a Caffeine Capsule as an Over-the-counter Alertness Aid Using *Coffea arabica* Beans

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Background: Sri Lanka lacks standalone caffeine options despite some gyms offering caffeinated supplements and a few imported products. This study addresses this gap by creating a locally-made caffeine capsule using readily available *Coffea arabica* beans.

Objectives: To formulate an over-the-counter alertness aid in Sri Lanka, utilizing locally sourced beans and dichloromethane extraction, and to assess *in vitro* efficacy using quality parameters of the formulated capsules; weight variation, disintegration, dissolution with a focus on enhancing accessibility compared to imported caffeine supplements

Methods: The study assessed the optimal solvent for caffeine extraction based on yield percentage, employing thirty minutes of ultrasound-assisted maceration in sodium carbonate-infused distilled water followed by liquid-liquid extraction. The crude caffeine obtained was recrystallized using absolute ethanol. Empty hard gelatine capsules were filled with the prepared caffeine formulation (extracted caffeine and lactose). The resulting capsules with 200 mg of caffeine in each, were evaluated for weight variation, disintegration, and dissolution characteristics.

Results: Dichloromethane was chosen as the optimal solvent over ethyl acetate based on the liquid-liquid extraction. Recrystallized caffeine was much whiter than yellowish crude. Formulated capsules carried an average content weight of 619 mg with all capsules falling within the acceptable pharmacopeial weight deviation range of 7.5. They disintegrated readily within 3 minutes and fully dissolved giving average absorbance of 1.025 similar to that of imported 'Caffeine 200' capsules (1.074) at 273 nm.

Conclusions: This study successfully formulated caffeine capsules that meet quality control standards for weight variation, disintegration, and dissolution. Comprehensive safety assessment, including residual solvents, microbial contamination, and clinical trials, is required before marketing. Locally-produced caffeine capsules can fill the market gap, offering a more accessible and cheaper alternative, potentially influencing alertness aid purchasing behaviour.

Keywords: *Alertness-aid, Caffeine, Capsules, Coffea arabica, Stimulant*

Acknowledgement: *Research grants, Technology transfer office, University of Ruhuna.*

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PP 09

Formulation and Evaluation of an Antioxidant and Sun Protective Herbal Facial Cream

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Background: Herbal facial creams are gaining popularity due to their potential antioxidant and sun protective properties. These creams can help mitigate oxidative stress and protect the skin from harmful UV radiation. The use of medicinal plants such as *Curcuma longa*, *Glycyrrhiza glabra*, *Aloe vera*, *Camellia sinensis*, and *Azadirachta indica* offers a natural alternative to synthetic ingredients. Evaluating the antioxidant activity and sun protective factor of these formulations is crucial for developing effective and safe skincare products.

Objective: To formulate a herbal facial cream using Sri Lankan grown medicinal plants and evaluate its *in vitro* antioxidant activity and sun protective factor (SPF)

Methods: The cream was formulated using extracts from *Curcuma longa* rhizome, *Glycyrrhiza glabra* roots, *Aloe vera* green rind, *Camellia sinensis* leaves, and *Azadirachta indica* leaves. The formulation process involved heating both oil and aqueous phases to 75°C. The oil phase consisted of white soft paraffin (8.25 g), liquid paraffin (3.30 g), cetostearyl alcohol (3.96 g), cetomacrogol (1 g), and polysorbate 80 (2.15 g). The water phase consisted of *Aloe vera* (2.5 g) and water up to 50 g. Additionally, 0.5 g of phenoxy ethanol was used as a preservative. The water phase was added to the oil phase under continuous stirring, and active ingredients (6%) were incorporated as the temperature dropped to around 45°C. The cream was then tested for pH, homogeneity, colour stability, irritancy, antioxidant activity (DPPH assay), and SPF.

Results: The formulated cream had a pH of 5.4 and was homogeneous. The irritancy test showed no adverse effects among 30 participants. The DPPH assay revealed an IC_{50} value of 2052.3±22.1 µg/mL, with a positive control (100 mg vitamin C tablet) showing 15.796 µg/mL. The SPF value was determined to be 9.1.

Conclusions: The study successfully formulated a herbal facial cream using Sri Lankan grown medicinal plants, demonstrating promising antioxidant activity and sun protective factor. This herbal formulation could potentially offer a safer and effective alternative for skincare.

Keywords: *Antioxidant activity, Herbal facial cream, Medicinal plants, Skincare formulation, Sun protective factor*

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PP 10

Bioassay-Guided Fractionation and *in vitro* Study of Antibacterial Activity of *Tamarindus indica* L. Stem Bark and Formulation of an Ointment

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Background: The emergence of antibiotic resistance leads to find new antibacterial compounds. *Tamarindus indica* L. (*T.indica* L) (Siyambala) is a medicinally significant plant used in traditional medicinal systems for antibacterial activity.

Objective: To perform bioassay-guided fractionation and evaluate the antibacterial activity of the crude extract of the internal stem bark of *T. indica* L. and formulate an ointment

Methods: The plant was authenticated at the National Herbarium, Peradeniya and stem bark was shade-dried and refluxed using 80% ethanol. The freeze-dried extract was subjected to phytochemical screening (PS) and agar well diffusion (AWD) against *Staphylococcus aureus* (ATCC 25923) and *Escherichia coli* (ATCC 25922). The extract was subjected to bioassay-guided fractionation with hexane, dichloromethane, and ethyl acetate and fractions were evaluated for PS and AWD. Three formulations were prepared using 2.5%, 5% and 10% of the crude extract. AWD test was conducted for each formulation and physical stability was evaluated for 14 days. Ciprofloxacin 2 mg/mL and dimethyl sulfoxide were used as positive (P) and negative (N) controls for extracts while mupirocin ointment 2% w/w (P) and ointment base (N) were used for formulation testing.

Results: Crude extract indicated presence of phenols, flavonoids, saponins, terpenoids, tannins, carbohydrates, reducing sugars, triterpenoids and alkaloids. Extract showed antibacterial activity against *S. aureus* and *E. coli* with 15.47±0.40 and 16.10±0.17 mm zone of inhibition (ZOI) respectively at 16 mg/mL. Hexane fraction showed a minimum ZOI, 9.40±0.00 and 10.90±0.17 mm for *S. aureus* and *E. coli* respectively. Ethyl acetate fraction had maximum ZOI, 17.91±0.38 and 18.25±0.23 mm for *S. aureus* and *E. coli* respectively. The highest antibacterial activity was shown for 2.5% formulation against *S. aureus* (26.55±0.77 mm) and 10% formulation against *E. coli* (14.09±0.08 mm). Mupirocin ointment showed 35.63±0.37 and 20.89±0.04 mm ZOI against *S. aureus* and *E. coli* respectively. All formulations were physically stable during the tested period.

Conclusion: Tested ointment formulations were physically stable and showed antibacterial activity against tested bacteria. Clinical trials to prove safety and efficacy are recommended.

Keywords: *Agar well diffusion, Anti-bacterial, Bio-assay guided fractionation, Ointment, Tamarindus indica L.*

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PP 11

Development of an Antibacterial Herbal Cream Combining *Carica papaya* Leaf Extract and Ascorbic Acid

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Background: *Carica papaya* (Papaya) exhibits medicinal properties such as antibacterial and anti-inflammatory effects while, ascorbic acid also possesses significant antimicrobial and antioxidant properties. The combination of papaya extract with vitamin C is used to check the enhancement of antibacterial activity while development of topical formulation will be beneficial for the consumers offering a potential solution for various skincare needs.

Objective: To evaluate the *in vitro* antibacterial and antioxidant activity of *C. papaya* leaf extract and ascorbic acid, and develop an antibacterial cream

Methods: The ethanolic leaf extract (18 g) was obtained by maceration method and preliminary phytochemical identification was performed. *In vitro* antioxidant activity was evaluated using DPPH assay. Antibacterial activity was evaluated for the extract (25, 50, 100, 125, 250, and 500 mg/mL), ascorbic acid (1.5, 3.0, 6.0, 7.5, 15.0, 30.0 mg/mL), and combination of the extract and ascorbic acid (50:3 mg/mL), using agar well diffusion method against *Staphylococcus aureus* and *Pseudomonas aeruginosa*. Ciprofloxacin (2 mg/mL) was used as the positive control. Two herbal cream formulations (2.5% and 5%) were developed using effective concentrations in 50:3 ratio (extract: ascorbic acid), and stability and antibacterial activities were evaluated.

Results: Alkaloids, phenolic compounds, tannins, diterpenes, amino acids, cardiac glycosides, carbohydrates, and flavonoids were present in the ethanolic extract. *C. papaya* extract showed free radical scavenging activity at IC_{50}= 900 µg/mL in the DPPH assay compared to the IC_{50} value of ascorbic acid (IC_{50}= 8 µg/mL). The highest concentration of *C. papaya* extract exhibited 18.76±0.53 mm zone of inhibition against *S. aureus* and 16.51±2.55 mm against *P. aeruginosa*. 10.18±0.13 mm and 9.74±0.32 mm zone of inhibitions were observed in the highest concentration of ascorbic acid against *S.aureus* and *P. aeruginosa*, respectively. Combining papaya extract with ascorbic acid enhanced antibacterial activity resulting in 25.94±2.73 mm zone of inhibition against *S. Aureus* and 23.54±3.74 mm against *P. aeruginosa* in the highest concentration (500+30 mg/mL) which showed a significant difference (p<0.05), compared to each ascorbic acid and papaya extract. Both formulated creams F_1 and F_2 exhibited 12.04±0.74 mm and 22.22±1.03 mm against *S. aureus* and 9.94±0.64 mm and 14.83±0.13 mm against *P. aeruginosa*. They were stable under tested parameters like organoleptic test, homogeneity, viscosity, pH, spreadability, and phase separation.

Conclusion: This study shows that *C. papaya* has antioxidant and antibacterial activity, and ascorbic acid enhances the antibacterial activity of the *C. papaya* crude extract against *S. aureus* and *P. aeruginosa* which can be used to develop an antibacterial cream.

Keywords: *Antibacterial activity, Antioxidant activity, Ascorbic acid, Carica papaya, Herbal cream*

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PP 12

Evaluation of Lipase Inhibitory Activity and Formulation of Polyherbal Syrup for Hyperlipidemia

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Background: Since synthetic medications used in hyperlipidemia cause undesirable side effects upon long term administration, prompting interest in natural remedies for their non-toxic properties. Thus, *Kalanchoe pinnata* and *Atalantia ceylanica* plants which were scientifically proven with serum cholesterol reducing activity were considered in this study.

Objectives: To evaluate the lipase inhibitory activity and toxicity profile of the aqueous leaf extracts of *K. pinnata* and *A. ceylanica*, to formulate a polyherbal syrup and evaluate physicochemical properties and stability

Methods: The aqueous macerated products of each fresh leaves were freeze-dried and test samples of (15000, 12000, 11000, 10000, 5000, 2500 ppm) were prepared to evaluate *in vitro* lipase inhibitory and brine shrimp lethality assays. The lipase inhibitory assay was triplicated using Orlistat as the positive control. The 1 mg/mL of 1.5 mL porcine pancreatic lipase enzyme and 1.5 mL of each test sample were mixed and incubated at 30℃ for 1hour. Then 3 µL of 10mM P-nitro phenyl butyrate substrate was added, re-incubated for 5 minutes at 30℃ and absorption was measured at 405 nm. Five different syrup bases were prepared using distilled water, saccharin, sodium benzoate, citric acid and subjected to evaluate stability and physicochemical properties at room temperature. Three different extract ratios of *K. pinnata* and *A. ceylanica* were incorporated to the stable base and three polyherbal syrups were prepared and evaluated lipase inhibitory activity, color, odor, appearance and pH along with long-term and short-term stability.

Results: The 15000 ppm concentration showed the highest lipase inhibition for the *K. pinnata* and *A. ceylanica* (36.68%±0.002 and 76.02%±0.004, respectively) compared to the positive control (IC_{50} 1224.75 ppm). The polyherbal syrup with extraction ratio of 1.5: 1.1 showed the highest enzyme inhibition (63.06%±0.008) with non-toxic nature. This formulation was stable at room temperature to date with odorless, clear pale green appearance and the pH was at the acceptance range of pH 4.0-6.9.

Conclusion: The stable polyherbal syrup which showed 63% of lipase inhibition with no toxic effects can be considered for further development to treat hyperlipidemia.

Keywords: *Atalantia ceylanica, Hyperlipidemia, Kalanchoe pinnata, Polyherbal syrup*

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PP 13

Evaluation of *in vitro* Anti-urolithiatic Activity of *Hemidesmus indicus* Sri Lankan Medicinal Plant used in Ayurvedic Medicine

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Background: Urolithiasis is a prevalent condition affecting humans worldwide. The formation of calcium oxalate stones is the most common type, constituting about 80% of cases. Since currently available synthetic medications are associated with various side effects, there is a growing interest in complementary and/or alternative medicines due to their perceived safety, effectiveness, and lower cost.

Objective: To evaluate the *in vitro* anti-urolithiatic activity of *Hemidesmus indicus* (Iramusu) in inhibiting the formation and growth of urinary stones

Methods: Aqueous and hydro-alcoholic extracts of *H. indicus* was prepared by washing, drying, grinding, and using a Soxhlet apparatus. The aqueous extract used 15 g of plant material with 250 mL distilled water for 72 hours, while the hydro-alcoholic extract used 175 mL ethanol and 75 mL distilled water for 48 hours. Extracts were filtered, concentrated, freeze-dried, and stored at 4°C. Anti-urolithiatic activity was evaluated using nucleation and growth assays by preparing 1000 ppm to 62.5 ppm concentration series of stem, root, and leaf extracts to check the inhibition of calcium oxalate crystallization, by using cystone as positive control. Lethality of various extract concentrations was assessed by using *in vitro* brine shrimp assay.

Results: When considering both nucleation and growth assays, growth assay showed the highest inhibition values. The resulting growth inhibition values of aqueous root extract were 44-65% and the 70% hydro-alcoholic extract exhibited 47-75%. For the aqueous stem extract, the inhibition values were from 19-25% and for the 70% hydro-alcoholic extract, it was 51-70%. For the aqueous leaf extract, the inhibition values were 26-59% and for the 70% hydro-alcoholic extract it was 14-36%. Out of the inhibition percentages, the aqueous extract of the root and 70% hydro-alcoholic extract of the stem showed significant anti-urolithiatic activity ($p<0.05$). However, only the aqueous root and leaf extracts showed least toxic nature at the concentrations that showed the anti-urolithiatic activity.

Conclusions: Comparative analysis indicates that aqueous extracts of root and 70% hydro-alcohol extract of stem exhibit significant anti-urolithiatic activity. Studies are recommended to formulate a solid dosage form by incorporating the aqueous root extract for the treatment of urolithiasis due to the least toxicity to overcome the limitations and adverse effects.

Keywords: *Anti-urolithiatic, Calcium oxalate stones, Cystone, Growth, Hemidesmus indicus, Nucleation*

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PP 14

Evaluation of Physiochemical and Microbial Stability of Commercially Available Analgesic Syrups in Karapitiya, Sri Lanka

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Background: Medicines in multidose containers (ex: liquid dosage forms) expose to the environment due to repetitive opening and closing, accelerates the degradation of its quality, leading to inappropriate consumption. Thus, it is crucial to follow the instructions including storage depicted by healthcare professionals.

Objective: To evaluate the physiochemical and microbial stability of commercially available analgesic syrups after keeping open for 0^{th}, 15^{th}, and 30^{th} days

Methods: Five brands (A-E) of analgesic syrups (paracetamol/ibuprofen) were purchased from community pharmacies in Karapitiya using simple random sampling method and they were opened according to the frequency mentioned in British National Formulary (BNF). The organoleptic properties (OP) were observed for color, odor, and appearance. The pH, viscosity, density, and uniformity of mass of delivered doses were tested using a digital pH meter, Brookfield viscometer, pycnometer, and provided measuring cup, respectively. Microbial evaluation was performed by enumeration of bacteria by the spread plate method. All tests were conducted for 0^{th}, 15^{th}, and 30^{th} days after opening. The data were analysed using a one-way ANOVA. Standard limits given in United States Pharmacopeia (USP) were considered.

Results: The OPs remain unchanged throughout the study period. Except for sample D, others were within USP limits of pH. The density of all samples increased with time and was statistically significant ($p<0.05$). Viscosity changes of A, C, and E samples were statistically insignificant ($p>0.01$), while B and D were statistically significant ($p<0.01$). In uniformity of mass of delivered doses, except sample E, there was at least one occasion where the BP limit ($\leq$2 doses exceed average weight±10%) was exceeded. Samples A and D were devoid of microorganisms on 0^{th} day, while sample C (50 CFU/mL) was within USP limits ($<10^2$ CFU/mL). Samples B and E (5×10^2 CFU/mL) exceeded the limit and on 15^{th} day, all samples were exceeded USP limits. On 30^{th} day, all samples were exceeded USP limits but had less CFU/mL than on 15^{th} day.

Conclusion: As per the frequency mentioned in BNF, repeated opening of syrup bottles affects their physical and microbiological quality and stability.

Keywords: *Analgesic syrup, Colony forming units, Microbial stability, Physiochemical stability*

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PP 15

Perception of BPharm Undergraduates on the Impact of Community Pharmacy Practices on Microbial Contamination of Pharmaceuticals

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Background: Pharmaceuticals have the potential to become contaminated with microorganisms, posing serious health risks to patients. This study provides insights into the current community pharmacy practices which may lead to contamination of pharmaceuticals.

Objective: To analyze the perception of BPharm undergraduates of the University of Ruhuna on the impact of community pharmacy practices on microbial contamination of pharmaceuticals

Methods: A qualitative study was performed via in-depth interviews. In-depth interviews were conducted using a semi-structured questionnaire until the saturation point was reached. Thematic analysis was used to process the qualitative analysis.

Results: The saturation point was obtained with 15 participants. Out of the 15 participants, 11(73.34%) were females. All the participants were in the age range of 18-29 years and 4th year of their course of study. During qualitative analysis, six main themes emerged: current pharmacy practices, contributing factors for poor practices, impact on end-users, influence of regulations, and potential solutions. Participants had various concerns, including inadequate environmental control, mishandling of drugs, heavy workloads, and lack of facilities. Participants stated that the impact of contamination on end users (patients) was significant, raising concerns about stability, therapeutic efficacy, and health risks. Participants emphasized the importance of regulations but noted challenges in compliance. As strategies to reduce contamination risks of pharmaceuticals due to community practices, participants suggested reducing tablet quantity in containers, using blister packs, enhancing hygiene, educating patients and pharmacy staff, limiting tablet issuance, using small bottles for dispensing tablets, and strengthening regulations as solutions for better contamination control.

Conclusions: The study reveals satisfactory concerns about community pharmacy practices leading to pharmaceutical contamination. Focusing on good community pharmacy practices is crucial to mitigate these risks and ensure safety.

Keywords: *BPharm undergraduates, Community pharmacy, Microbial contamination, Pharmaceuticals, Qualitative*

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Evaluation of Antioxidant Potential in Extracts from Underutilized Sri Lankan Fruits and Leaves

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Background: Exploring natural antioxidants derived from underutilized sources holds substantial potential for improving human health and nutrition by mitigating oxidative stress and associated diseases.

Objective: To evaluate the antioxidant capacity of extracts derived from underutilized fruits and leaves, specifically Lovi (*Flacourtia inermis*), Veralu (*Elaeocarpus serratus*), Polos (*Artocarpus heterophyllus*), Bilin (*Averrhoa bilimbi*), Siyambala (*Tamarindus indica*), and Ambarella (*Spondias dulcis*) sourced from Sri Lanka

Methods: The fruits and leaves underwent extraction processes using water and methanol. For the hot water extraction, 10 grams of dried and powdered sample were used. For the maceration process, 5 grams of dried and powdered samples were soaked in a mixture of water and methanol. This involved preparing a hot water extract, a room temperature macerated water extract, and a methanol extract. Subsequently, these extracts were assessed for their antioxidant activity using in-vitro bioassays, namely the DPPH assay (2,2-diphenyl-1-picrylhydrazyl) and the ABTS assay (2,2′-azino-bis-(3-ethylbenzothiazoline-6-sulfonic acid).

Results: Among fruit extracts, Veralu and Lovi hot water extracts showed the highest scavenging activity as 90.46% and 90.53% respectively at 1 mg/mL. Among the leaf extracts, Veralu leaf hot water extract and macerated water extract displayed the highest scavenging activity with values 90.74% and 90.53%, respectively at 1 mg/mL, suggesting their potential as valuable sources of antioxidants by the ABTS assay. All three fruit and leaf extracts of Veralu depicted high scavenging activity values by the DPPH assay. Among fruit extracts, Veralu hot water extract displayed scavenging activity as 86.3% and for the macerated water extract as 80.55% at 1 mg/mL. Among the leaf extracts, Veralu leaf hot water extract and macerated methanol extract displayed scavenging activity as 86.30% and 77.90%, respectively at 1 mg/mL. Ascorbic acid was used as the positive control where 88.42% was found for ABTS and 61.10% was found for DPPH as radical scavenging values.

Conclusion: Among the six fruits studied, Veralu fruit and leaf extracts exhibited high antioxidant activity in both the DPPH and ABTS assays, indicating their potential as rich sources of antioxidants.

Keywords*: Antioxidant activity, Fruit extracts, Leaf extracts, Natural antioxidants, Underutilized*

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Investigation of *in vitro* Anti-inflammatory and Anti-oxidant Effects of Selected Natural Starches in Sri Lanka

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Background: Starch is a naturally occurring polysaccharide derived from different sources such as rice, potatoes, and corn, and is widely used as an excipient in the pharmaceutical industry. Several research have been conducted with different natural starches as tablet excipients.

Objective: To determine the anti-inflammatory and anti-oxidant potency of alkali and methanolic extract of selected starch varieties in Sri Lanka compared to maize starch BP

Methods: Two traditional rice varieties (*Oryza sativa L*), *Pachchaperumal and Sudu heenati* (in Sinhala) and Sri Lankan Potato (*Solanum tuberosum L*) were selected. Starch extracts were prepared by immersing them in aqueous sodium hydroxide (0.2%) and methanol (80%) solutions for 24 hours, followed by milling, filtration (150 µm sieve size), decantation, centrifugation (6000 rpm) and drying to 50ºC. *In vitro* anti-inflammatory potency of these extractions was assessed by the egg albumin denaturation assay using diclofenac sodium as positive control. *In vitro* anti-oxidant activity was assessed by 2,2-diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging assay using ascorbic acid as the positive control.

Results: Alkali and methanolic starch extractions exhibited significant egg albumin denaturation potency with IC_{50} values of 11.62 mg/mL and 26.03 mg/mL for *Pachchaperumal (p=0.01 and p=0.02)*, 35.48 and 93.75 mg/mL for *Sudu heenati (p=0.04 and p=0.01)*, 95.58 mg/mL and 18.62 mg/mL for *S. tuberosum* (*p=0.04 and p=0.01*), respectively compared to the commercially available maize starch BP. IC_{50} values of diclofenac sodium was 0.907 mg/mL. Alkali and methanolic extracts demonstrated significant anti-oxidant potency with IC_{50} values of 9.07 mg/mL and 7.83 mg/mL for *Pachchaperumal* (*p=0.02 and p=0.04*), 8.63 mg/mL and 5.17 mg/mL for *Sudu heenati* (*p*=0.02 and *p*=0.02), 16.54 and 7.94 mg/mL for *S. tuberosum* (*p=0.03 and p=0.03*), respectively compared to commercially available maize starch BP and IC_{50} values obtained for ascorbic was 0.133 mg/mL.

Conclusion: The alkali and methanolic starch extractions of *Sudu heenati* and *Pachchaperumal* and *S. tuberosum L* have anti-inflammatory and anti-oxidant potency compared with maize starch BP.

Keywords: *Anti-inflammatory activity, Anti-oxidant activity, Oryza sativa L., Solanum tuberosum L., Starch*

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Evaluation of *In vitro* Antimicrobial Potential in the Sub-fractions of the Ethanolic Extract of *Leucas biflora* and Their Application in Herbal Soap Formulation

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Background: Medicinal plants show promising activity for antimicrobial solutions worldwide. *Leucas biflora* plant is used for conjunctivitis, skin diseases and cleaning wounds for ethnomedicinal purposes.

Objectives: To conduct bioassay-guided fractionation to assess the antimicrobial activity of ethanolic extracts derived from the entire plant of *Leucas biflora*, and to develop an antimicrobial soap formulation

Methods: The whole plant was authenticated, dried (200 g), then refluxed and freeze-dried. Four concentrations (1.5, 3, 6, and 12 mg/mL) of crude extract underwent phytochemical analysis (PA) and Agar well-diffusion (AWD) against *Staphylococcus aureus* (ATCC 25923), *Escherichia coli* (ATCC 25922) and *Candida* species (Clinical isolate). Ethanolic extracts were fractionated and four fractions (hexane, dichloromethane, ethyl acetate and residual) underwent PA and AWD. Ciprofloxacin and fluconazole were used as positive controls (PC) while dimethyl sulfoxide was used as negative control (NC). Crude extracts were incorporated (0.2, 0.4, and 0.8 g) into soap formulations and evaluated for antimicrobial activity (commercial antimicrobial soap-PC, distilled water-NC), Total Fatty Matter (TFM) and pH.

Results: The crude extract indicated presence of phenols, flavonoids, saponins, carbohydrates, reducing sugars, terpenoids and triterpenoids. Crude extract (12 mg/mL) showed the highest activity of 13.92±0.02 mm zone of inhibition (ZOI) against *E. Coli.* The residual fraction exhibited the most potent inhibition, 13.03±0.26, 12.75±0.37, and 7.99±0.21 mm for *E. coli*, *S. aureus*, and *Candida* species, respectively. The highest ZOI showed for ciprofloxacin against *E. Coli.* (45.37±1.58 mm) and fluconazole against *Candida* species (17.89±1.13 mm). The highest ZOI showed for 0.8 g soap formulation against *E. coli*, *S. aureus*, and *Candida* species as 14.37±0.18, 21.83±1.13, and 16.15±0.65 mm, respectively even better than PC 11.54±0.51, 8.60±0.50 and 0.00 mm, respectively. Developed soaps were yellowish solids with a pleasant odor with TFM of 70.993% and pH of 9.15.

Conclusions: Ethanolic crude extracts of the *L. biflora* whole plant and all fractions possess antimicrobial activity against chosen bacterial strains and fungi. Formulated herbal soaps were of expected quality and antimicrobial efficacy against tested pathogens.

Keywords: *Antimicrobial, Bioassay guided fractionation, Herbal soap, Leucas biflora, Phytochemical analysis*

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Knowledge, Attitudes and Practices on Haircare Products among the Undergraduate Students in Universities and Higher Educational Institutes in Western Province, Sri Lanka

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Background: Haircare refers to the practices and products used to maintain the health, cleanliness, and appearance of hair. There are several haircare products, such as shampoos, conditioners, hair oils etc., currently available in the market and they may help to stimulate hair follicle growth, prevent damage, such as split ends, breakage, and dryness and promote healthy hair growth**.** Having knowledge about haircare products, maintaining positive attitudes towards their benefits, and practicing effective and safe usage is important for achieving optimal results, promoting awareness, and ensuring overall hair health and well-being.

Objectives: To evaluate knowledge, attitudes, and practices (KAP) on haircare products among undergraduates in universities and higher educational institutes in Western Province, Sri Lanka

Methods: A descriptive cross-sectional study was conducted among undergraduates (n=201) aged 18-40 years in the Western province. A pre-tested self-administered structured questionnaire was prepared as a Google form in three languages i.e. Sinhala, English and Tamil, and distributed through social media platforms. The questionnaire consisted of sections relevant to sociodemographic details and KAP on haircare products.

Results: There were 84 undergraduates from state universities and 117 from non-state higher educational institutes. Among them, 72% were female. Shampoo (64.18%) and hair oil (48.26%) were the most abundantly used haircare products. However, only 40.79% of them selected haircare products according to their hair types and 26.36% were mentioned that they 'never' concerned about that. The rest of the participants mentioned it was 'sometime' (28.85%) and had 'no idea' about it (3.9%). Further, the study showed that undergraduates considered several factors when they purchased haircare products such as brand name (67.16%), price (65.17%), ingredients (71.64%), expiration date (65.17%), benefits on hair (73.6%), odour of the product (34.32%), container and packaging (22.89%). The study assessed the attitude of the participants on the statement 'More expensive haircare products are better' and the majority of participants (49.75%) were neutral on that. Only 18.91% agreed with that and 23.38% were disagreed.

Conclusion: Based on the results some undergraduates are still unaware of the accurate information regarding haircare products, and some require further knowledge.

Keywords: *Haircare, Hair products, Shampoo*

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PP 20

Antibacterial and Photocatalytic Activity of Silver Nanoparticles Produced by Aqueous Extracts of *Cordyline fruticosa sp.* Leaf

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Background: Antimicrobial resistance (AMR) is a global health crisis. Nanoparticles with strong biocidal activity are promising candidates in combatting AMR compared to the time and labor-intensive manufacturing of new antibiotics. Semiconductor-nanoparticles also have the potential to degrade bio-accumulative azo-dyes that cause serious threats to water quality and public health.

Objectives: To evaluate the antibacterial activity of water extracts (WE) of *Cordyline fruticosa sp.* leaves and silver nanoparticles (AgNPs) synthesized using the above extract against gram-positive and gram-negative bacteria. The study also assesses photocatalytic activity of AgNPs against the model dye Malachite Green (MG)

Methods: Nanoparticles synthesized from three varieties of *C. fruticosa*; candy cane (1CC), waihee rainbow (2WR) and pink cascade (4PC) and their water extracts were tested for antibacterial activity against strains of *Escherichia coli* (ATCC 25922) and *Staphylococcus aureus* (ATCC 25923), using the well-diffusion technique. Gentamycin discs were used as positive control and 0.9% saline solution was used as negative control. Samples of 267 and 4000 ppm of 4PC-AgNPs were assessed for their photocatalytic activity using Malachite Green (MG) as a model-dye and reassessed with the addition of $NaBH_4$. Bandgap energy was calculated for AgNPs and one-way ANOVA analysis was conducted using MS Excel.

Results: Zones of inhibition (ZOI) of 35 mm and 29 mm, higher than ZOI of the positive control, against *S. aureus* and *E. coli* respectively were displayed by 4PC-AgNPs. However, AgNPs and WE did not have a significant difference in antibacterial activity against either strain, as $p>0.05$ and F<F crit. Bandgap energy calculations showed that all synthesized AgNPs were semiconductors. Although a significant reduction of the absorption peak of MG was not observed when 4PC-AgNPs were tested alone, the absorption dropped from around 2.0 to 0.1 when both concentrations were tested with $NaBH_4$. Visual observations suggest that MG completely degraded within 5 minutes.

Conclusion: WE and AgNPs both display antibacterial potential, although not significant, with a greater activity against gram-positive bacterial strains. 4PC-AgNPs were identified as a potential candidate for azo-dye degradation, with $NaBH_4$ maximizing its photocatalytic efficiency.

Keywords*: Antibacterial activity, Antimicrobial resistance, Cordyline fruticosa, Photocatalytic activity, Silver nanoparticles*

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Evaluation of Antidote Activity of Cow Dung against Piscicides of *Derris* Plant Origin

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Background: Plants like '*Derris'* produce rotenone, a potent piscicide. Using rotenone as a piscicide presents challenges for aquaculture due to its toxicity to a wide range of aquatic life, potentially harming non-target species and disrupting aquatic ecosystems. An antidote is necessary to counteract the adverse effects of rotenone on non-target aquatic species.

Objectives: To determine the LC_{90} (lethal concentration for 90% of the population) value of *Derris* plant extract using the brine shrimp assay and to evaluate cow dung as a potential natural antidote for piscicides poisoning by the *Derris* plant

Methods: This study utilized aerial parts of *Derris* plant and cow dung, collected from Southern province in Sri Lanka. The identity of the *Derris* plant was confirmed at the National Herbarium Peradeniya. Plant extraction involved soaking powdered material in acetone and distilled water (maceration), followed by filtration, rotary evaporation and freeze-drying. The lethality of the extracts was evaluated using a brine shrimp bioassay, determining the LC_{90} values. Antidote activity was tested on cichlid fish (n=20) using different concentrations of cow dung solution (5, 10, and 20 g/L). Potassium permanganate ($KMnO_4$) served as a positive control, used a negative control (without antidote) and fish mortality was recorded after treatment.

Results: Brine shrimp bioassay revealed that lethal concentrations of water and acetone extracts of *Derris* plant aerial parts with LC_{90} values of 45.1 and 31.4 µg/mL, respectively. Antidote activity tests using cow dung showed no fish mortality at concentrations of 5, 10, and 20 g/L for water extract. $KMnO_4$ served as a positive control with no fish mortality. The study identified cow dung at a concentration of 5 g/L as the most effective antidote.

Conclusions: The results suggest that the potential antidote properties of cow dung against piscicide (rotenone) toxicity in fish. However, further research is crucial to understanding the underlying mechanisms and chemical components involved, highlighting its potential for sustainable aquatic ecosystem management.

Keywords: *Antidote, Cow dung, Derris plant, Piscicides, Rotenone*

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PP 22

Preliminary Evaluation of the Appropriateness of the Label on Haircare Cosmetic Products in Sri Lanka

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Background: Haircare products have gained immense significance, transcending mere aesthetics into essential components of holistic self-care routines in today's beauty-conscious world. The importance of these products lies not only in enhancing hair's appearance but also in promoting overall scalp health and addressing specific concerns such as dandruff, dryness, and damage. Hence, choosing the greatest hair cosmetics is crucial, and one of the key factors influencing a customer's decision to purchase such goods is the cosmetic label.

Objective: To evaluate the comprehensiveness of the information provided on the labels of haircare cosmetic products in Sri Lanka

Methods: In this preliminary study, hundred haircare cosmetic products: hair oil, shampoo, hair conditioner, hair gel, hair cream, hair spray, hair colour and hair serum were randomly selected as test samples from the supermarkets in the Western province according to the convenient sampling method, from January to April 2024. The product's name, brand name, manufacturer details, country, manufactured and expired dates, shelf life, volume or weight, price, directions, contact information, hair types, pH value, ingredients, storage conditions, precaution details and presence of symbols were recorded. Data were analysed using Microsoft Excel 2016.

Results: All the analysed product labels contained details of product name, brand name, price, manufacture and expired dates. Although, different hair types often require different hair cosmetics to address their specific needs effectively, only 41% of products mention the hair type in their label. Also, 57% of products' labels contain special precautions such as external use only and avoiding contact with eyes, in case of irritation or allergy discontinuing use etc. However, only 43% of products contained those in three languages.

Conclusions: Although all tested haircare cosmetic products contained details about product name, brand name, price, manufacture and expired dates, not all selected products showed details on special precautions, warning statements, and instructions on the use. Hence, it is recommended that the label contents of haircare cosmetics be improved to ensure that consumers have access to comprehensive information.

Keywords: *Cosmetic, Label, Haircare shampoo, Hair oil*

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PP 23

Evaluation of *in vitro* Anticoagulation Effect of the Crude Extract of *Bridelia retusa* Bark

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Background: Blood coagulation disorders are common and existing treatment for these disorders often have serious side effects. Therefore, it is useful to formulate a novel safer anticoagulant medication using herbal extracts supported by scientific evidence validating its ethnomedical and pharmacological applications. *Bridelia retusa* has a diverse range of natural phytochemicals that possess antibacterial, antifungal, anti-inflammatory, antioxidant, and antidiabetic activities in different parts of the plant.

Objectives: To evaluate *in vitro* anticoagulation activity of crude extract of the bark of *B. retusa*

Methods: This was a lab based experimental study. Initially, methanol crude extract of *B. retusa* bark was prepared using the maceration method. Then the extract was subjected to a qualitative phytochemical screening. The anticoagulation property was assessed using four different concentration series (5, 10, 15, 20 mg/mL) of crude extract dissolved in dimethyl sulfoxide (DMSO) using 20 healthy individuals' blood. Heparin (0.04 mg/mL) and DMSO were taken as the positive control, and negative control, respectively. For each set of test tubes 1 mL of blood and 50 µL of prepared crude extract solution were added. Then the clotting time was evaluated according to the Lee and White method.

Results: The preliminary phytochemical screening revealed that extraction contained alkaloids, phenols, flavonoids, tannins, sugar, proteins and saponins. All four concentration series showed greater anticoagulant effects than negative control and 20 mg/mL concentration took maximum time (6.61±1.66 min) for coagulation compared with other concentration series and positive control (5.92±1.49 min).

Conclusion: The methanolic crude extract of *B. retusa* bark is having anticoagulant activity. Further studies are needed to check the activity in separated compounds of the crude extract.

Keywords: *Anticoagulation effect, Bridelia retusa, Capsule, Lee and white method*

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PP 24

Investigation of Comparative Bioactivities of Modified Dosage Forms of an Ayurvedic Polyherbal Formulation

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Background: Balabilvashunti decoction (BD) is an ayurvedic polyherbal formulation comprised of three plant ingredients: rhizome of *Zingiber officinale*, whole plant of *Sida alnifolia*, and root bark of *Aegle marmelos*. BD is widely utilized within clinical practice, particularly for addressing geriatric diseases. However, despite its prevalence, patients encounter several limitations when BD is prescribed. These include the substantial time required for decoction preparation, difficulty in finding the correct raw materials due to adulteration and the short shelf-life of the prepared decoction.

Objective: To develop modified dosage forms derived from BD to overcome the existing limitations

Methods: BD was prepared according to the traditional decoction preparation method. From each raw material 20 g was mixed with 1920 mL of water and boiled to reduce the volume up to 240 mL. The resulting liquid is the traditionally prepared BD; it was separately freeze-dried (FD) and spray-dried (SD) to obtain FD powder and SD semisolid dosage forms respectively. Therefore, the three dosage forms were in the form of liquid-BD, powder-FD and semisolid-SD. The bioactivities of the BD were compared with SD and FD focusing on antioxidant activity assessed through 2,2-diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging activity, and ferric iron reducing power assay (FRAP). Ascorbic acid was used as the standard for DPPH and FRAP assay.

Results: DPPH assay depicted IC_{50} values of 131.88±3.96 µg/mL, 190.23±2.22 µg/mL, 60.6±0.12 µg/mL and 1.17±0.05 µg/mL for FD, BD, SD and ascorbic acid respectively. In the FRAP assay 0.50 absorbance was recorded at concentrations of 2.33±0.24 mg/mL, 5.49±0.85 mg/mL, 3.59±0.40 mg/mL for the BD, SD, BD respectively when compared to ascorbic acid (81.44±7.62 µg/mL)**.**

Conclusions: BD, FD and SD possess significant ($p \leq 0.05$) antioxidant activity. Overall, it can conclude that the modified dosage forms FD and SD may have similar therapeutic effects as BD based on the antioxidant activity.

Keywords: *Antioxidant, Balabilvashunti, Decoction, Freeze-dry, Spray-dry*

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PP 25

Evaluation of the Antifungal Effect of *Elaeocarpus serratus* and *Acacia concinna*

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Background: The importance of antifungal activity spans multiple fields such as health, pharmaceutical, cosmetics, food etc. There are natural products rich with antifungal effects and incorporating herbs with antifungal properties into herbal hair care products offers multiple benefits, including natural preservation, scalp health promotion, hair loss prevention, reduced irritation, and alignment with consumer preferences for natural ingredients.

Objectives: To compare the antifungal activity of aqueous and ethanol extracts of *Elaeocarpus serratus* (Ceylon olive) and *Acacia concinna* (Shikakai) and to evaluate the antifungal activity of different ratios of ethanol extracts of two plants

Methods: The antifungal activity of both ethanolic and aqueous extracts of *E. serratus* leaves and *A. concinna* pods were evaluated using the agar well diffusion method against the *Candida albicans* (ATCC 10231). Fluconazole (25 µg) was the positive control and normal saline, and distilled water were the negative controls. The crude extracts of *E. serratus* and *A. concinna* were added individually (100 mg/mL) in 1:1, 1:2 and 2:1 combination ratios.

Results: The zone of inhibition (ZOI) of ethanol and aqueous extracts of *E. serratus* were 24.3±1.2 and 19.7±1.5 mm, respectively. It was 24±1 mm for fluconazole (25 µg). However, both ethanol and aqueous extracts of *A. concinna* did not show any antifungal effect against *C. albicans.* Furthermore, the mixtures of the ethanol extracts of *A. concinna* and *E. serratus* showed ZOI as 20.3±0.57, 22.3±0.57 and 18.3±0.57 mm for the ratios of 1:1, 1:2 and 2:1, respectively.

Conclusion: Both the aqueous and ethanolic extracts of *Elaeocarpus serratus* have been identified as plant extracts with anti-fungal activity against *Candida albicans*.

Keywords: *Anti-fungal, Elaeocarpus serratus, Acacia concinna*

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Anti-fungal Activity of *Plectranthus amboinicus* (Lour.) Spreng and *Plectranthus zatarhendi* E. A. Bruce Grown in Sri Lanka

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Background: Since ancient times, traditional medicine has relied on the use of medicinal plants to combat a range of infectious diseases. *Plectranthus amboinicus* and *Plectranthus zatarhendi* (family *Lamiaceae*) have been utilized in traditional medicine in Sri Lanka as a remedy for skin disorders, inflammatory conditions and microbial infections for a long period.

Objective: To evaluate the *in vitro* antifungal activity of crude extracts of *P. amboinicus* (Lour.) and *P. zatarhendi* E. A. Bruce grown in Sri Lanka

Methods: The plants were authenticated and the aqueous and hexane extracts were prepared from matured leaves and stems. For the extracts, the antifungal assay was performed against *Candida* species (clinical isolate) and a fungal strain obtained from a clinical sample of pityriasis versicolor patient. The assay was performed at two different concentrations of 500 and 1000 mg/mL by using disk diffusion method and well diffusion method, respectively and each test was triplicated. Ketoconazole was used as the positive control while distilled water and DMSO were used as the negative controls. The zone of inhibition (ZOI) was measured and the results were analyzed by One-way ANOVA test.

Results: At a concentration of 500 mg/mL, the hexane extracts of both plants displayed significantly higher activity against *Candida* species compared to the aqueous counterpart by the disk diffusion method. ZOI was not significantly higher in *P. amboinicus* compared to *P. zatarhendi*. The highest ZOI at 1000 mg/mL was observed for the hexane extract of *P. amboinicus* with a ZOI of 15.00±1.40 mm by well diffusion method. Interestingly the highest ZOI against the fungal strain was obtained for the hexane extract of *P. amboinicus* (1000 mg/mL) with a ZOI of 17.36 ±1.55 mm by well diffusion method.

Conclusion: The study revealed that hexane extracts of *P. amboinicus* and *P. zatarhendi* possessed a higher antifungal activity against *Candida* species and the fungal strain obtained from pityriasis versicolor patient compared to the respective aqueous extracts.

Keywords: *Antifungal activity, Candida species, Fungal strain, Hexane, Plectranthus species*

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Evaluation of *in vitro* Antioxidant Activity of Crude Extracts of *Basella alba* and *Oxalis corniculata* and Formulation of a Topical Herbal Gel

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Background: *Basella alba* and *Oxalis corniculata* belong to Basellacea and Oxalidacea families, respectively. These plants contain a wide variety of natural phytochemicals that demonstrate especially antioxidant properties and have been traditionally utilized in treating different skin disorders in folk medicine and Ayurvedic treatments.

Objectives: To explore the phytochemical properties of *Basella alba* and *Oxalis corniculata* extracts, evaluate their *in vitro* antioxidant effects, assess the combined extracts' antioxidant activity, and formulate a topical herbal gel to treat oxidative stress induced topical skin inflammatory conditions due to free radicals

Methods: The study comprised the water extraction of fresh *Basella alba* leaves employing sonication and centrifugation, and the 70% methanolic extraction of *Oxalis corniculata* whole plant through maceration for 72 hours. Qualitative phytochemical analysis was performed on these extracts to identify various compounds such as carbohydrates, phenols, flavonoids, and alkaloids. Their antioxidant potential was evaluated spectrophotometrically using the DPPH (2,2-diphenyl-1-picrylhydrazyl) radical scavenging assay at the wavelength of 517 nm, with L-ascorbic acid serving as the positive control. The study entailed the formulation of a topical gel incorporating the two extracts (2%), carbopol 940, carboxymethylcellulose, and disodium EDTA. The final formulation was tested by DPPH assay to evaluate the antioxidant activity and all the formulations were kept at room temperature for 30 days to evaluate the stability.

Results: The phytochemical analysis of both extracts revealed the presence of carbohydrates, phenols, flavonoids, alkaloids, saponins, terpenoids, triterpenoids, and sterols, except tannins and proteins. In the DPPH assay, notable radical scavenging activity was observed for *Basella alba*, *Oxalis corniculata*, and the combined extract, with IC_{50} values of 0.913, 0.581, and 0.311 mg/mL, respectively, compared to ascorbic acid with an IC_{50} value of 0.042 mg/mL. Formulated herbal gel with an IC_{50} value of 0.881 mg/mL was stable for 30 days.

Conclusions: *Basella alba* and *Oxalis corniculata* contain numerous phytochemicals with antioxidant properties, and the combined extract exhibited higher antioxidant activity compared to individual plant extracts. A novel topical formulation with significant antioxidant activity was demonstrated, suggesting potential for further testing and commercial development.

Keywords: *Anti-oxidant, Basella alba, DPPH assay, Herbal gel, Oxalis corniculata,*

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In vitro Evaluation of Anti-fungal Activity of *Cyanthillium cinereum* (L.) H. Rob. Extract for Herbal Shampoo Formulation

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Background: The increase in fungal infections encourages the use in natural remedies such as *Chyanthillium cinereum* (L.) H. Rob., from the Asteraceae family, recognized for its potent antifungal properties. Based on this, the formulation and evaluation of an herbal anti-fungal shampoo were conducted in the present study.

Objectives: To evaluate the *in vitro* anti-fungal activity of the whole plant extract of *Cyanthillium cinereum* (L.) H. Rob. against *Candida albicans,* formulate and determine the stability of a trial shampoo mixture

Methods: Antifungal activity of the methanolic crude extract of *C. cinereum* was determined using agar well diffusion method against clinical isolates of *Candida albicans*. Fluconazole was used as the positive control. Three shampoo formulations, namely F1, F2, and F3 were formulated by adding different concentrations of crude extract; 50, 100, and 150 mg/mL, respectively. The formulated shampoo mixtures were subjected to both physiochemical and antifungal evaluation and compared with a commercially available anti-fungal shampoo (Dansel K) and kept for 15 days to check the stability.

Results: In the antifungal assay, three different concentrations of crude extract, 100, 200, and 400 mg/mL, and positive control showed the zone of inhibition (ZOI) 13.98±1.32, 14.56±0.48, 16.11±0.65, and 21.98±1.00 mm, respectively. Among the trial formulations, F3 formulation exhibited a 17.85±0.58 mm ZOI while commercial product exhibited 24.12±0.73 mm (p<0.001). The formulated shampoo is opaque and green in color with a pleasant odor. It showed acceptable physicochemical characteristics and stability. Trial shampoo formulation yielded 12 mL of foam, while the commercial product did 20 mL. Both have 20-30% solid content with moderate dirt dispersion ability and the pH was 6-7 range with 7205 cP of viscosity.

Conclusion: There is a potential for using the crude extract of *C. cinereum* in shampoo formulations. Isolation and identification of the pure compound/s of the crude extract that remarkably contribute/s for this activity would be more worthwhile in commercialization.

Keywords: *Anti-fungal assay, Ethnomedical and pharmacology, Herbal anti-fungal shampoo, Physiochemical parameters, Stability*

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PP 29

Determine the Price, Availability and Affordability of Selected Essential Medicines to Treat Diabetes Mellitus in Private Market in Gampaha District, Sri Lanka

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Background: Availability, affordability and price are important factors for medicines, especially for diseases requiring lifelong treatments such as Diabetes Mellitus (DM). The COVID-19 pandemic affected many aspects of countries, making it crucial to study these factors in Sri Lanka post-COVID period.

Objective: To describe the availability and analyze the affordability and pricing of selected essential medicines (EDM) for treating DM in the Gampaha district, Sri Lanka

Methods: A descriptive quantitative study was conducted based on the World Health Organization and Health Action International (WHO/HAI) Manual, 2nd edition. The EDM list for Sri Lanka, published by the Ministry of Health, was used to select the oral drugs and insulin used for treating DM. Data were collected from May to July 2023 from all State Pharmaceuticals Corporation (SPC) outlets, 5 outdoor pharmacies of private hospitals (POPD), and 32 registered private pharmacies (RPP) in the Gampaha district to check the availability of the selected drugs. POPD were selected based on convenience, and RPP were selected randomly from the list of registered pharmacies in Gampaha district. The median price ratio (MPR) was calculated using the International Reference Price (IRP) for Innovator Products (IP) and Lowest Priced Generics (LPG).

Results: The average percentage availability of the selected essential medicines (7 products) for DM was 100% in SPC outlets, RPP, and POPD in the Gampaha district. However, the percentage availability of the LPG was low for some medicines, e.g., soluble insulin at 4%. All selected insulins, as well as the IPs of metformin 500 mg tablets and gliclazide 80 mg tablets, required more than one daily wage (1DW) of a lowest-paid unskilled government worker to buy a month's supply. Among the selected medicines, only the IP and LPG of glibenclamide 5 mg tablets required less than 1DW to purchase a month's supply. The MPR of IP and LPG for all products was between 1 and 5, indicating that they were 1 to 5 times higher than the IRP.

Conclusions: The selected essential medicines for diabetes mellitus were available in GD; however, the availability of the cheapest options is not satisfactory. Furthermore, 6 out of 7 drugs are not affordable for the Sri Lankan community, and all drug prices are higher than the IRP.

Keywords: *Availability, Affordability, Diabetes mellitus, Medicine price*

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PP 30

Assessment of Knowledge and Attitudes on Prescription Errors among Pharmacists in Selected Hospitals and Community Pharmacies in Galle Municipal Area

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Background: Prescription errors are defined as a failure in the prescription writing process that gives wrong instructions to patients. Pharmacists are ones of responsible professionals for detecting prescription errors and taking appropriate actions to prevent patient harm. The knowledge and attitudes of pharmacists are imperative to enhance patient safety by preventing prescription errors.

Objective: To evaluate the knowledge and attitudes of pharmacists regarding prescription errors in hospitals and community settings within the Galle municipal area

Methods: A descriptive cross-sectional study was carried out among 60 pharmacists; 30 pharmacists from the outdoor pharmacy department and 30 registered community pharmacists. Data were gathered through a self-administrated and pre-tested questionnaire. The questionnaire consisted of socio-demographic data, knowledge, and attitudes of the pharmacists. Pharmacists' knowledge was assessed using a mock prescription and two questions. One mark was given to each identified error and correct answer. The respondents were asked 7 questions regarding the attitudes. The variable was recorded into two, giving 0 marks for responses 'strongly disagree', 'disagree', 'neutral' and 1 for responses 'agree', or 'strongly agree'. Data were analysed using SPSS version 25.0.

Results: The mean±SD age of the respondents was 37.4±7.6 years, 73.3% were women. The qualifications of the pharmacists are Degree (8.3%), Diploma (48.3%) and certificate of proficiency (43.3%). The mean score of total knowledge of hospital and community pharmacists were 13.0±1.7 and 13.3±2.3, respectively out of 19 marks. The mean score of total attitudes of hospital pharmacists was 5.9±1.1 and score of community pharmacists was 5.6±1.1. The attitudes among pharmacists in selected hospitals and community pharmacies were significantly influenced by age (p=0.018). The knowledge among pharmacists was not significantly associated with socio-demographic factors (age, sex, setting, educational qualification).

Conclusions: The knowledge of prescription errors is approximately same level among hospital and community pharmacists. It was evident that pharmacists needed more knowledge and training in detection of prescription errors. It is recommended to organize educational programs on prescription errors.

Keywords: *Attitudes, Community pharmacist, Hospital pharmacist, Knowledge, Prescription errors*

Theme: Nursing and Midwifery

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PP 31

Practices and Associated Factors on Episiotomy Care among Postnatal Mothers in Teaching Hospital Mahamodara

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Background: Episiotomy is a surgical incision made during childbirth process to widen the vaginal opening. Care of episiotomy is essential to facilitate healing and prevent from infections among postnatal mothers ensuring their overall wellbeing. It is essential to report the current episiotomy care practices and their associated factors to enhance maternal outcomes and evidenced based obstetric practices in Sri Lanka.

Objective: To assess the practices and associated factors on episiotomy care among postnatal mothers in Teaching Hospital Mahamodara

Methods: A descriptive cross-sectional study was conducted among postnatal mothers (with episiotomy) at Teaching Hospital Mahamodara. Postnatal mothers (n=206) were recruited using non-probability convenience sampling method. A pre-tested, interviewer-administered questionnaire was used to collect data. SPSS version 25.0 was used to analyze the data. The demographic characteristics were analyzed using descriptive statistics. The Chi-square test was applied to analyze the factors associated with episiotomy care.

Results: A considerable proportion of postnatal mothers (n=83, 40.3%) had completed education up to GCE O/L. Majority of them (n=93, 45.1%) had a monthly income of 30 000-60 000 LKR. More than half of the mothers in the sample (n=106, 51.5%) have experienced their first pregnancy. Notably, 68.9% (n=142) of mothers were unemployed. A larger proportion of mothers (n=122, 59.2%) had a moderate level of practices on episiotomy care. Majority of mothers (n=136, 66%) have cleaned episiotomy area three times a day on first day of post-delivery. Subsequently majority of mothers (n=186, 90.3%) dried and pat after cleaning perineum. Most of them, (n=177, 85.9%) used baby soap to clean their perineum with and 41.3% mentioned they wipe from front to back after cleaning. The practices regarding episiotomy care were significantly associated with their monthly income (χ^2 -18.87, p=0.04).

Conclusion: The findings indicate that the majority of mothers exhibit good practices concerning episiotomy care. This highlights the significance of providing substantial postnatal support and education on episiotomy care.

Keywords: *Episiotomy care, Practices, Postnatal mothers*

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Assessment of Physical Activity among Students in Selected Government Nursing Training Schools in Western Province of Sri Lanka: A Descriptive Cross-sectional Study

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Background: The World Health Organization defines physical activity (PA) as any energy-demanding body movement and engaging in moderate or vigorous PA promotes health. Nurses are a distinct group of professionals at increased risk of physical inactivity and they should practice healthy routines for improved health thereby providing better patient care.

Objective: To determine the level of physical activity among nursing students from three selected Government Nursing Training Schools (NTS) in the Western Province of Sri Lanka

Methods: A descriptive cross-sectional study was conducted among 267 voluntarily consented nursing students selected by stratified sampling technique, from government NTS in Colombo, Kalutara, and Kandana in the Western Province of Sri Lanka. NTS student registers were used as the sampling frame and participants were selected randomly from first, second and third year students. The level of PA was measured using the validated International Physical Activity Questionnaire (IPAQ) in the Sri Lankan context. PA was categorized based on Metabolic Equivalent of Task (MET) minutes/week as inactive (<600 METs), minimally active (600-2999 METs), and health-enhancing physically active (>3000 METs). Descriptive analysis was performed using SPSS version 25.0.

Results: Of the nursing students, the majority were in their second year (83%, n=221), and females (94%, n=250) with a mean age of 25±3 years. Most students were inactive (39%, n=105), and 25% (n=66) were minimally active. Only 36% (n=96) were engaged in health-enhancing physical activity with an average MET minutes/week of 2696.46±2789.81. The average sitting time per day was 8±4 hours.

Conclusions: This study revealed that most of the nursing students were not engaged in PA adequately. Study findings emphasize the need to promote PA among nursing students of NTS in the Western Province. Future research should explore effective interventions to uplift PA level of the NTS students in the Western Province of Sri Lanka.

Keywords: *IPAQ, Nursing students, Physical activity, Sri Lanka*

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PP 33

Psychological Well-being among Nursing Officers at Colombo East Base Hospital, Mulleriyawa

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Background: The psychological well-being of nursing officers is a crucial factor that impacts the job satisfaction, performance, and retention of nursing professionals in the healthcare sector. Also, since psychological well-being is directly linked to the quality of patient care provided by nursing officers, determining the psychological well-being of nursing officers is a timely necessity.

Objective: To assess the psychological well-being among nursing officers in Colombo East Base Hospital Mulleriyawa, Sri Lanka

Methods: A descriptive cross-sectional study was conducted among conveniently selected 150 nursing officers in Colombo East Base Hospital Mulleriyawa. A self-administered questionnaire including the 18-item version of the psychological well-being (PWB) scale. The PWB scale consists of six aspects of well-being and happiness; rated on a seven-point scale. Analysis was done according to standard scoring protocols. Component scores are summed up to get the total PWB score ranging from 18 to 126. Higher scores indicate higher levels of psychological well-being.

Results: Most of the participants were married, (69%, n=104) females (80%, n=120), aged between 23-33 years (48%, n=72), and grade III nursing officers (37%, n=56). The mean±SD scores of each PWB subscale were as follows; autonomy (9.19±2.39), environmental mastery (10.01±2.51), personal growth (8.87±2.30), positive relations with others (12.49±2.68), purpose in life (11.65±3.24), and self-acceptance (8.87±1.84), respectively. The mean total PWB score was 61.09±7.86. The median total PWB score was 62 (IQR=11) with a minimum score of 30 and a maximum score of 76. A majority (65%, n=97) of nurses had total PWB scores below the 65th percentile.

Conclusions: The results of the study indicate a low level of psychological well-being among nursing officers at Colombo East Base Hospital Mulleriyawa, Sri Lanka. This indicates the necessity to implement strategies to improve their psychological well-being.

Keywords: *Nurses, Psychological well-being, Sri Lanka, Stanford SPARQ tool*

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PP 34

Assessment of Physical Activity among Antenatal Mothers Attending a Selected Hospital in Sri Lanka: A Descriptive Cross-sectional Study

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Background: Regular physical activity (PA) is essential throughout life, including pregnancy, as it bears numerous benefits while posing minimum health risks. Antenatal mothers are a distinct group of individuals at increased risk of physical inactivity, and they should practice healthy routines to minimize pregnancy-related complications.

Objective: To determine the level of PA among antenatal mothers who visit a selected clinic at Castle Street Hospital, Sri Lanka

Methods: A descriptive cross-sectional study was conducted among 300 antenatal mothers who visited an antenatal clinic at Castle Street Hospital, Sri Lanka. Data were collected upon obtaining voluntary consent from participants recruited via a consecutive sampling technique. The level of PA was measured using a validated International Physical Activity Questionnaire (IPAQ) in the Sri Lankan context. PA was categorized based on Metabolic Equivalent of Task (MET) minutes/week as inactive (<600 METs), minimally active (600-2999 METs), and health-enhancing physically active (>3000 METs). Descriptive statistics were performed using SPSS version 25.0.

Results: The mean±SD age of the participants was 30±7 years. The majority were Sinhalese (58%, n=173), Buddhist (48%, n=145), and residing in urban areas (51%, n=152). Most antenatal mothers were minimally active (44%, n=132). Out of all, 35% (n=106) were health-enhancing physically active with an average MET minutes/week of 2652.60±2170 (median=2757, IQR=3564), while the rest were inactive (21%, n=62). The average sitting time per day was 4±2 hours.

Conclusion: This study revealed that most of the antenatal mothers were not engaged in health-enhancing levels of PA. Study findings emphasize the need to promote PA among antenatal mothers. Future research should explore effective interventions to uplift the PA level of antenatal mothers.

Keywords: *Antenatal mothers, Physical Activity, Sri Lanka*

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PP 35

Knowledge and Practical Administration of Glasgow Coma Scale among Nursing Undergraduates in Sri Lanka

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Background: The Glasgow Coma Scale (GCS) is a tool applied in worldwide healthcare facilities to identify neurologic dysfunctions and monitor progress in level of consciousness, diagnosis and maintain communication among healthcare professionals.

Objective: To assess the level of knowledge and practical administration of GCS among final year nursing undergraduates from the selected universities in Sri Lanka

Methods: A descriptive cross-sectional study was conducted amongst final year nursing undergraduates from randomly selected universities in Sri Lanka (Sri Jayewardenepura (n=20), Colombo (n=70) and Peradeniya (n=33). Data collected using a newly developed, pre-tested questionnaire answered by study participants. The level of knowledge was classified according to the mean score, score <22 inadequate; >23 adequate knowledge and practice levels were scored <12 as unsatisfactory, score >13 satisfactory. Data analysis using the SPSS version 23.0 for the analysis of descriptive data comparing these groups against their university affiliation with analysis of variance.

Results: Among 123 participants, 69.1% (n=85) were female. More than half 59% (n=72) of the participants had adequate knowledge. A proportion of 51% (n=61) had a satisfactory knowledge of clinical scenario practice and practical application was seen among 36% (n=44) of them. There was no significant difference (p=0.71) in the means knowledge score between the universities. However, mean practice scores showed a significant difference (p<0.001) between their university affiliations.

Conclusions: Study showed that the percentage of undergraduates with adequate knowledge and satisfactory practices were 59% and 36%, respectively. Further, they demonstrate adequate knowledge and practical application of the GCS too. Hence, each higher educational institute need to re-visit their academic program in order to achieve the desired level of competencies of the graduates. Therefore. the teaching theoretical concepts and the skill of performing GCS assessments shall be included with more clinical experiences combined with demonstrations in classrooms to enhance the knowledge of GCS among nursing graduates.

Keywords*: GCS, Knowledge, Nurses, Nursing students, Practice*

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Adverse Effects of Handling Systemic Anticancer Therapy: A Comparative Analysis Among Nursing Officers in Two Selected Hospitals in Sri Lanka

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Background: Despite safety measures, chronic low-dose occupational exposure to systemic anticancer therapy (SACT) negatively affects healthcare workers. Nurses are at a greater risk of exposure and related adverse effects (AE) due to their frequent and multiple roles in handling SACT.

Objective: To assess the adverse effects of handling SACT among nurses compared to controls

Methods: A comparative analysis was conducted among randomly selected volunteer nurses. The exposure and non-exposure groups comprised nurses working at the National Cancer Institute Sri Lanka (NCI) (n=132), and the National Hospital Sri Lanka (NHSL) (n=136), respectively. A pre-tested and self-administered questionnaire with 50 items was utilized to assess AE, including their prevalence, frequency, severity, and distress. Nurses with chronic diseases and those handling hazardous drugs, except for SACT, were excluded. Descriptive and inferential statistics were analyzed with SPSS version 25.0.

Results: Participants' mean±SD age was 31.74±5.7 in NCI and 31.26±6.83 in NHSL. SACT handling roles included intra venous chemotherapy administration (88.6%), other chemotherapy types (61.4%), drug dilution (72.7%), waste management (65.2%), and excreta handling (51.5%). The exposure group had higher rates of headache (93.9% vs 76.5%), dizziness (64.4% vs 22.1%), nausea (36.4% vs 24.3%), skin irritation (96.2% vs 25.7%), and menstrual irregularity (31.9 vs 22.2%). The exposure experienced miscarriages (8.6%), preterm labor (3%), low birth weight (2.6%), fatal death (1.7%), and sub-fertility (1.5%) while those are no reported with in the non-exposure group. Exposure group showed higher mean value for prevalence (5.64±3.77 vs 3.56±3.17) of common adverse effects along with higher mean values of frequency, severity, and distress. Independent sample *t*-tests indicated significant differences between the two groups (p=0.000 each) in these aspects (prevalence, frequency, severity, and distress of AE).

Conclusions: Compared to controls, headache, dizziness, skin irritation and reproductive AE are high with handling SACT. Periodical surveys and strategies need to be implemented to enhance occupational health safety among nurses in handling SACT.

Keywords: *Adverse effects, Systemic anticancer therapy, Nurses*

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PP 37

Assessing Spiritual Care Competency and Influential Factors among Nurses at the National Institute of Cancer Care, Sri Lanka

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Background: Spiritual care plays a crucial role in uplifting the quality of life of patients. Nurses need to have the best competency in spiritual care to provide a profound holistic care. There are no published studies assessing the competencies of nurses in providing spiritual care for patients with cancers in the Sri Lankan context.

Objective: To assess the spiritual care competency and the associated factors among nurses who employed at national Institute of cancer care, Sri Lanka

Methods: This quantitative descriptive cross-sectional study was conducted among 220 nurses who were purposively selected from National institute of cancer care. Pre-tested self-administered questionnaire containing a 27-item spiritual care competency scale (SCCS) with a Likert scale from 1 to 5 levels of responses was used to collect data. The questionnaire consists five subdomains; assessment and implementation of spiritual care, professionalization and improving the quality of spiritual care, personal support and patient counselling, attitudes towards patient spirituality and communication. Descriptive statistics and inferential statistics (Pearson correlation and independent sample *t*-test) were used to analyse the data.

Results: The study findings showed that the mean±SD age of the participants were 33.66±8.56 and majority (91%) of them were females and more than half (52%) were married and only 24% were graduates. Most of them (71%) have heard the term spiritual care and 27% have learned about spiritual care from hospital manuals. The overall mean±SD score of the SCCS was 100.7±10.6, showing a moderate competency. Communication and attitudes towards patient spirituality scored highest competencies with mean scores (out of 5) of 4.1 and 3.9, respectively. There was a weak significant relationship with age (p=0.021, r=0.155) and working experience (p=0.007, r=0.181).

Conclusion: Spiritual care competency among Sri Lankan nurses who serve at national institute of cancer care was at moderate level. The findings suggested to conduct awareness programmes for nurses to improve the competencies on spiritual care.

Keywords: *Associated factors, Nurses, Spiritual care, Spiritual care competency*

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Artificial Intelligence in Healthcare; Applications and Diagnostic Interpretations: A Literature Review

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Background: Artificial intelligence (AI) is the most transformative technology of the 21st century and directs a new approach to shift healthcare through rapid advancement. It provides the path for clinicians to interpret the patient level in greater depth. Enthusiasm for applications of AI in healthcare has continued to grow.

Objective: To provide a comprehensive understanding of the types and applications of AI in healthcare and diagnostic interpretations

Methods: The review was performed systematically using the terms; "Artificial intelligence" AND "Healthcare" AND "Applications" AND "Diagnosis" from March 2024 to April 2024 on four databases; Google Scholar, Science Direct, PubMed, and Web of Science to identify the publications between 2015 and 2024.

Results: Thirty-five articles were eligible from the initial search strategy of 2860 studies. Of these, nine definitions for AI were identified. AI is the imitation of human cognitive functions through several forms of computer software. Upon the organization of evidence, three types of AI; artificial neural networks including convolutional neural networks, machine learning, and modern deep learning were identified. Findings revealed that; digital consultation, robot-assisted surgery, patient interaction and chatbots, clinical trials, support evidence-based decision-making, drug development, and biomedical information processing as the applications of AI. Neurodegenerative disorders, cardio-vascular disease: progression, mortality and hospital stay, bladder volume, through medical image, cancer, epidemic, and psychiatric re-admission were identified as diagnostic interpretations.

Conclusion: To identify the role of AI's potential to enhance healthcare, careful design, implementation, and evaluation of AI-enabled systems will be important. Health ministries and hospital administration are recommended to enhance the utilization of AI in clinical practice to improve the quality of care. In the era of modern AI, healthcare workers need to be enriched with skills in applying AI techniques in the health field by engaging in training programs related to AI.

Keywords: *Applications, Artificial intelligence, Diagnosis, Healthcare*

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Factors Associated for Readmissions of Patients Diagnosed with Psychiatric Disorders at the National Institute of Mental Health

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Background: Psychiatric disorders are a group of diseases that affect the mind. Psychiatric readmissions are related to many factors that intensify the disease severity and adversely impact on cost and quality of healthcare. The increased rate of readmission of patients with psychiatric diseases reduces the patient's quality of life and becomes detrimental to patients and their families.

Objective: To examine factors associated with readmissions of patients diagnosed with psychiatric disorders at the National Institute of Mental Health (NIMH)

Methods: A case-control study was conducted between June to August 2023 at NIMH. In total, 348 patients admitted with their guardians/relatives were conveniently recruited. Cases (n=174) were individuals who had >1 psychiatric admissions during the past two years at the time of data collection. Those who had their first inpatient admission at the time of data collection constituted the control group (n=174). Data were collected using a pre-tested interviewer-administered questionnaire and patient records. Data were analyzed using descriptive statistics and Chi-square tests.

Results: The mean age was 44.13 years for cases and 43.40 years for controls. Among cases, the majority were men (53.4%; n=93) and were single (45.4%; n=79). In controls, the majority were men (57.5%, n=100) and married (64.9%; n=113). Schizophrenia was the most common diagnosis reported for cases (46.3%; n=88) and controls (61.2%; n=112). Marital status (p<0.001), family history of psychiatric disorders (p<0.001), alcohol/substance use (p=0.002), living environment (home or care house) (p<0.001), family support (p<0.001), stigma (p<0.001), feeling socially neglect (p<0.001), having permanent caregiver (p<0.001), difficulty in obtaining drugs (p<0.001) and poor drug compliance (p<0.001) were significantly associated with psychiatric readmissions.

Conclusions: Identification of multiple factors assists clinicians to design interventions targeted at decreasing psychiatric readmissions which in turn improves the well-being of people. Alcohol/substance abstinence, home visits by health professionals, improved drug compliance, and family support are recommended to minimize psychiatric readmissions.

Keywords: *Mental health, Psychiatric disorders, Readmission*

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Quality of Life of the Patients Receiving Anti-Cancer Chemotherapy at National Cancer Institute, Sri Lanka

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Background: Administration of chemotherapy is beneficial in managing cancer, related adverse effects, fears, and psychological distress may negative contribute to Quality of Life (QoL) among patients with cancer.

Objective: To assess the QoL and its associated factors among the patients undergone the anti-cancer chemotherapy at the National Cancer Institute, Sri Lanka

Methods: A descriptive cross-sectional study was carried out among randomly selected and volunteered 312 registered patients in the oncology clinic in 2023. Data was collected using a pre-tested interviewer-administered questionnaire consisting of baseline characteristics and QoL. The QoL of was assessed using the validated Functional Assessment of Cancer Therapy-General (FACT-G). Data were analysed using descriptive and inferential statistics.

Results: The mean±SD age was 50.00±14.37 years. The majority were females (54.3%, n=174), Sinhalese (86.8%, n=275), employed (59%, n=187), and the major income source was family (78.2.%, n=248). A higher proportionate of patients have blood and lymphatic cancers (30.6%, n=97). The majority were receiving chemotherapy as their treatments (64.1%, n=200) and least proportionate were undergone surgeries (11.2%, n=35). Amongst those receiving chemotherapy, the majority underwent a chemotherapy cycle ranging from 1 to 3 sessions (85.8%, n=272). The FACT-G-QoL scores ranged from 23 to 99, with mean±SD scores for the four domains as follows: Physical well-being (18.7±5.4), social/family well-being (20.5±6.1), emotional well-being (16.2±4.7), and functional well-being (17.4±5.2). The age and gender were associated with QoL in one domain; emotional well-being (p=0.001 and p=0.002). Moreover, income status was associated with the physical well-being of the patients (p<0.001). In the contrary, education level was not associated with QoL in all four domains: physical, social-family, emotional and functional (p=0.568, p=0.267, p=0.509, p=0.435, respectively).

Conclusion: Age and gender significantly influenced emotional well-being among cancer patients, while income status notably affected their physical well-being. Implementing strategies aimed at enhancing QoL among individuals with cancer is imperative.

Keywords: *Chemotherapy, Emotional well-being, Functional well-being, Physical well-being, Social well-being*

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PP 41

Prevalence of Musculoskeletal Pain during Pregnancy among Postpartum Women: A retrospective Study

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Background: Musculoskeletal pain (MSKP) during pregnancy is a common entity that might affect the quality of life. Identifying the type of pain and associated characteristics can help manage MSKP during the pre and postnatal period.

Objective: To determine the prevalence and characteristics of MSKP during pregnancy and whether there is any association between pain characteristics and mode of delivery. We hypothesise mothers who experience severe MSKP will have cesarian delivery compared to mothers who experience less pain during their pregnancy period

Methods: A retrospective study was conducted on 150 postpartum mothers using a convenient sampling method in two women's hospitals. An interviewer-administered questionnaire was developed and validated before the study. The questions related demographics, delivery history, MSKP (using Numerical Pain Rating Scale), pain location (body chart), and activity level during pregnancy period were included. Descriptive and Chi-square tests were performed using SPSS 25.0 version. Pain characteristics were considered as independent variables and mode delivery was considered as a dependent variable in the analysis.

Results: The mean±SD age of the participants was 30.37±5.25 years. Prevalence of MSKP was 75.33% (n=113) and 38% (n=57) had moderate pain during their pregnancy according to the Numerical Pain Rating Scale. Out of those, 95.6% (n=108) of the women experienced pain during the third trimester and 85.0% (n=96) had pain in the lumbar region while 71.68% (n=81) experienced localized pain. Amidst, 56.6% (n=64) mentioned limitations in their daily activities due to pain. The percentage of normal vaginal deliveries was 62.0% (n=93). There was no significant association between mode of delivery and pain characteristics (pain score *p=0.085*, 3rd trimester *p=0.806,* pelvis pain *p=0.238,* lumbar pain, *p=0.774,* localized pain *p=0.349*).

Conclusions: Prevalence of MSKP is high during pregnancy period in Sri Lanka. The number of pregnant mothers engaging in physical activities in the form of set exercises is less. The hypothesis was rejected and no association between pain and mode of delivery among pregnant women.

Keywords: *Musculoskeletal conditions, Pain, Prenatal, Pregnancy*

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Knowledge on Warfarin and Associated Socio-demographic Factors Among Patients on Warfarin, Attending the Cardiology Clinic, Teaching Hospital Anuradhapura

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Background: Warfarin has a narrow therapeutic index, poor adherence by patients due to lack of knowledge leads to severe side effects. Therefore, understanding the patient's knowledge and timely education about warfarin are crucial for successful warfarin management. Even though, knowledge of warfarin was widely studied among patients, its level is unknown among the patients in Sri Lanka.

Objective: To determine the knowledge of warfarin and its association with socio-demographic factors among the patients on warfarin attending the Cardiology Clinic, teaching hospital Anuradhapura

Methods: A descriptive cross-sectional study was conducted at the cardiology clinic of teaching hospital Anuradhapura. Data were collected using an interviewer-administered questionnaire. As per the Zahid et al. 2020 study, for each question, '1' mark was awarded for each correct answer and '0' for each wrong answer. Final scores were presented as a percentage of correct answers for all the participants in the study. A cut-off >50% was considered as an adequate knowledge score. The association of knowledge with socio-demographic factors was analyzed by using the Chi-squared test in SPSS version 25.0.

Results: The study included 390 participants with a 93.85% response rate. Among the participants, the majority (54.1%) were in the age group of 58-87 years with a female predominance (61.5%). Among the total participants, most respondents (86.6%) had adequate knowledge about warfarin use and its outcomes, while 13.4% had inadequate knowledge. A significant majority, 91.3%, had adequate knowledge about INR regulation while 8.7% had inadequate knowledge. Results revealed that the educational qualifications of the participants were associated with higher knowledge levels of warfarin (p=0.017) although it was not influenced by other factors such as age (p=0.449), gender (p=0.866) or duration of therapy (p=0.162).

Conclusions: Level of education had a statistically significant association with patient's knowledge and the majority of participants had adequate knowledge about warfarin treatment. Age, gender, and duration of the warfarin treatment did not indicate a significant association with warfarin.

Keywords: *Cardiology, Knowledge, Oral anticoagulation, Teaching hospital Anuradhapura, Warfarin*

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PP 43

Incidence of Musculoskeletal Pain during Pregnancy among Postpartum Women: A Feasibility Study

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Background: Literature on musculoskeletal pain (MSKP) among Sri Lankan postpartum women (PPW) is scarce. Factors such as transitional changes from pregnancy to motherhood, accessibility and health concerns immediately after delivery, including pain and psychological symptoms, are some reasons that make this population challenging to interview.

Objective: To assess the feasibility of determining musculoskeletal conditions and pain incidence among PPW

Methods: A feasibility study was conducted in ward settings on 10% of the sample size using a convenient sampling method before a longitudinal cohort study. Two-month and six-month interviews will be conducted as part of the feasibility study using a follow-up questionnaire via telephone interviews. Descriptive statistical analysis was performed on the onsite interviews, and the practical concerns encountered were summarized.

Results: It was feasible to conduct a study by recruiting postpartum mothers in ward settings. Twenty-two mothers [(28±4.4 years, primiparous 68%, (n=15), caesarean emergency 27.3% (n=6)] with a mean postpartum period of 8.45 days were recruited. However, the following concerns were noted: baby care activities, attention required for babies with special concerns, and attending medical procedures challenged the interviewing process of mothers. The impact of pain related to delivery and inadequate sleep are some of the practical concerns encountered in mothers' responses. In addition to feasibility results, the prevalence of pain was assessed. During their pregnancy, 91% (n=20) of mothers had recurrent MSKP with a pain rating of 6.5±2.16, starting in the third trimester (54.5%, n=12). During postpartum, 18% (n=4) had pain in the shoulder region associated with breastfeeding. Two-month and six-month interviews will be conducted as part of the feasibility study.

Conclusions: It is feasible to conduct a study on postpartum mothers in ward settings. The main study should consider only specific questions to address the practical concerns. Musculoskeletal pain is prevalent in postpartum women during pregnancy, and shoulder pain is common during childcare activities in the postpartum period.

Keywords: *Breastfeeding, Musculoskeletal conditions, Pain, Postpartum, Pregnancy, Urinary incontinence*

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Knowledge, Attitudes, and Practices towards Tracheostomy Care among Nurses in A Selected Hospital in Galle, Sri Lanka

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Background: Tracheostomy care is a critical aspect of nursing practice, where patients with tracheostomy often require respiratory support. Adequate knowledge, positive attitudes, and appropriate practices among nurses are essential for ensuring the safe and effective management of patients with tracheostomies.

Objective: To assess the nurses' knowledge, attitudes, and practices regarding tracheostomy care in Base Hospital, Elpitiya

Methods: A descriptive cross-sectional study was conducted among 108 nurses at Base Hospital, Elpitiya using convenient sampling method. Data was gathered via a self-administrated questionnaire which included questions on knowledge, attitude and practice regarding tracheostomy care. Descriptive statistics and Chi-square test were used to analyse the data using SPSS version 25.0.

Results: Majority of the participants (95%, n=103) were females and mean±SD age was 36±4 years. A significant portion (69.4%, n=75) had a diploma as their higher educational qualification. Most of the nurses (61.1%, n=66) had over ten years of experience. The average knowledge score was 78.36±10.85, indicating a robust understanding of tracheostomy care among the majority of nurses. Attitude scores ranged from 12 to 16, with a mean score of 14.07±0.72, suggesting generally positive attitudes towards tracheostomy care. Practice scores varied widely (22 to 80), but the mean was 62.53±9.15, indicating a generally consistent and competent approach to tracheostomy care. Age and education level were associated with knowledge (p=0.42, 0.05), while gender was associated with practice (p=0.004).

Conclusions: Nurses exhibit a commendable proficiency level in their attitudes, knowledge, and practices regarding tracheostomy care. Although these findings underscore the effectiveness of current training, further improvement in nursing education and practice is essential in tracheostomy care.

Keywords: *Attitudes, Care, Knowledge, Nurses, Practice, Tracheostomy*

Theme: Medical Laboratory Science

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Assessment of Quality Control Parameters and Nutrient Composition of a Herbal Supplement *Asparagus falcatus* L. for Non-alcoholic Fatty Liver Disease

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Background: Herbal supplements have been used to manage liver diseases worldwide. Determination of safety, quality control parameters and nutrient composition in herbal supplements is an important consideration before conducting prospective phase I and II clinical trials.

Objectives: To assess quality control parameters and proximate nutrient composition of a newly developed herbal supplement, *Asparagus falcatus* L. (Family: Asparagaceae) using *in vitro* protocols

Methods: Aqueous refluxed (4h) leaf extract of *A. falcatus* was prepared and freeze-dried. Physicochemical parameters were determined according to the World Health Organization standard methods. A high-performance liquid chromatogram (HPLC) was developed by using a solvent system of 0.1% formic acid and acetonitrile at a ratio of 9:1. The analysis of microbial contamination was carried out using the Sri Lanka Standard method. The determination of heavy metals and proximate nutrient composition was carried out according to the Association of Analytical Communities standard methods.

Results: Physicochemical analysis revealed that the herbal supplement had total ash, water-soluble ash, and acid-insoluble ash at 6.8±0.4%, 2.3±0.1%, and 0.01±0.0%, respectively. The HPLC analysis revealed the presence of bioactive phytoconstituents in the supplement. The microbial analysis yielded negative results for aerobic plate count, *Escherichia coli*, *Staphylococcus aureus*, yeast, and mould. Arsenic, cadmium, lead, and mercury were not detected in the herbal supplement. The fiber, lipid, protein, and carbohydrate content of the herbal supplement were 16.16±0.85%, 1.03±0.20%, 6.17±0.35%, and 69.80±0.69%, respectively. Further, sodium, calcium, magnesium, and iron were present as minerals in the herbal supplement.

Conclusions: The physicochemical, HPLC, microbial, and heavy metal analysis ensure the overall quality of the herbal supplement *A. falcatus*. The presence of carbohydrate, protein, lipid, fiber, and minerals provided extra nutritional value to the herbal supplement to be used as a nutraceutical.

Keywords: *Asparagus falcatus L., Herbal supplement, Quality control parameters*

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Comparison of Patient-based Real Time Quality Control Programme with Conventional Quality Control Program for Serum Electrolytes

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Background: Patient-based real time quality control (PBRTQC) programme uses patient data to monitor the quality of test results in a clinical laboratory. It can be used as a cost-effective method to detect systematic errors in the analytical phase supplementing the conventional internal quality control (IQC) programme. The research data is sparse for PBRTQC in Sri Lanka.

Objective: To implement and compare PBRTQC program with conventional IQC program for serum electrolytes (Na^+ and K^+), at Teaching Hospital Karapitiya

Methods: Patient data within the reference ranges were extracted from the laboratory information system (LIS) for a period of one year retrospectively (76 549 data for Na^+ and 109048 for K^+) and used to calculate the target values; mean (M) and standard deviation (SD) for the two analytes. PBRTQC plots were constructed for serum Na^+ and K^+ separately, using reference ranges as truncation limits. Two methods were selected to set the control limits of the plots; maximum and minimum of Moving Average (MA) values and 3SD limits. Patient data (6281) were reviewed prospectively for two weeks utilizing the PBRTQC system for both analytes. The block size of the MA was taken as 80 based on sample size calculation. Number of rejected test results and bias of each analyte were compared with the error-detection rate of the conventional IQC. Calculations were done using SPSS version 22.0. All data were descriptively analyzed using constructed PBRTQC plots.

Results: The calculated target value (population M) for serum sodium and potassium were 139.5 (3SD 5.1) and 4.2 mmol/L (3SD 0.78), respectively. Maximum and minimum MA values for serum sodium and potassium were (145-136) mmol/L and (5.2-3.5) mmol/L, respectively. The number of rejected test results for serum Na^+ in MA-QC and SD-based PBRTQC were 2032 (31.6%) and 273 (4.3%), respectively. A bias of 2.15% was observed for serum Na^+ results. Analysis of serum K^+ results using PBRTQC program neither gave any bias nor alarms. There were no conventional IQC failures reported for both analytes within the two weeks.

Conclusions: Although conventional IQC did not detect any errors, PBRTQC raised QC alarms for serum Na^+ based on MA and 3SD limits. The QC limits and alarms being affected by patient specific factors are a limitation. The causes for QC alarms by PBRTQC need further scrutiny to refine this tool for optimization.

Keywords: *Conventional quality control, Moving average, Patient-based real time quality control, Serum electrolytes, Target value*

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Determination of *in vitro* Antidiabetic and Antioxidant Activities of *Dioscorea alata* L. Tubers

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Background: The tubers of *Dioscorea alata* L. are used to control blood glucose level of diabetic patients, and these underground edible tubers of *D. alata* L., commonly known as 'Raja ala' in Sri Lanka, were a major dietary constituent in the past and are still consumed today. However, there is no scientific evidence for the antidiabetic properties of *D. alata* tubers, while only a few studies were based on antioxidant activity.

Objectives: To investigate *in vitro* antidiabetic properties and antioxidant properties of water and ethanolic extracts of *D. alata* tubers grown in Sri Lanka

Methods: *D. alata* tubers were peeled off, and water and ethanolic extracts of the tubers were prepared using refluxing. To determine the antidiabetic properties, anti-amylase activity and BSA-glucose glycation inhibitory activity were performed. *In vitro* antioxidant activity was determined by 2,2'-azino-bis(3-ethylbenzothiazoline-6-sulfonic acid) (ABTS) and 2,2-diphenyl-1-picrylhydrazyl (DPPH) assays using standard methods. Student's *t*-test was performed for comparisons using Minitab 17.

Results: There was no significant antidiabetic activity in the water extract of *D. alata*. The IC_{50} values for the anti-amylase and anti-glycation assays of ethanolic extract of *D. alat*a were 178.54±10.41 and 85.68±3.14 µg/mL, respectively. The IC_{50} values for the ABTS assay of the water and ethanolic extracts of *D. alata* were 139.69±5.46 and 63.67±3.85 µg/mL, respectively. The IC_{50} values for the DPPH assay of the water and ethanolic extracts of *D. alata* were 1102.74±11.51 and 992.99±10.82 µg/mL, respectively.

Conclusions: The present study exhibited that the ethanolic and water extracts of *D. alata* possess antidiabetic and antioxidant properties, with the ethanolic extract showing more potent *in vitro* activities.

Keywords: *Antidiabetic, Antioxidant, Diabetes mellitus, Dioscorea alata L., Sri Lanka*

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Evaluation of Typical Patient Dose for Routine Adult Chest Computed Tomography Examinations at Teaching Hospital Peradeniya, Sri Lanka

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Background: Computed Tomography (CT) is essential in diagnostic imaging but delivers higher patient doses compared to conventional x-ray examinations. According to the International Commission on Radiological Protection (ICRP) publication 135, the typical patient dose (median value) can be used to optimize patient doses at the institutional level.

Objective: To propose typical patient dose values for adult patients undergoing routine chest CT examinations at Teaching Hospital Peradeniya, Sri Lanka

Methods: This retrospective, cross-sectional study was conducted from June to December 2023. A total of 262 CT dose reports from adult patients (18-88 years) were analyzed to extract patient dose indicators; volumetric CT dose index ($CTDI_{vol}$) and dose-length product (DLP).

Results: The proposed typical patient dose values for $CTDI_{vol}$ and DLP were: for non-contrast CT (NCCT) chest, 9.00 mGy and 281.54 mGy.cm, and for contrast-enhanced CT (CECT) chest, 9.21 mGy and 367.87 mGy.cm, respectively. Compared to reported values from six countries, the proposed $CTDI_{vol}$ for NCCT chest was higher by 84% in Singapore, 72% in Saudi Arabia, and 61% in South Australia, however, lower by 8% in Indonesia and 29% in Morocco. Similarly, the proposed DLP for NCCT chest was higher by 70% in Singapore, 96% in Pakistan, 70% in Saudi Arabia, and 69% in South Australia, but lower by 24% in Indonesia and 48% in Morocco. Typical $CTDI_{vol}$ values in this study were higher than previously reported values in Sri Lanka: 9.0 vs 7.4 mGy for the NCCT chest and 9.2 vs 8.3 mGy for the CECT chest. However, typical DLP values were comparable to those previously reported.

Conclusions: The typical patient dose values in this study are higher compared to literature values, indicating a need for dose optimization in chest CT examinations. These proposed values can help to improve current examination protocols at Teaching Hospital Peradeniya, Sri Lanka.

Keywords: *Chest Computed Tomography (CT), Dose-Length Product (DLP), Dose optimization, Typical values, Volumetric Computed Tomography Dose Index ($CTDI_{vol}$)*

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In vitro Anticoagulant Activity of Methanolic Extract of *Ficus hispida* (Hairy Fig) Bark

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Background: *Ficus hispida* L. f. (Hairy Fig), is a widely used herb in traditional medicine in Sri Lanka and is reported to have antimicrobial, antioxidant, antinociceptive, antineoplastic, and anti-diabetic activities. However, its potential anticoagulant effect on human blood is yet to be revealed, highlighting the importance of understanding its impact on blood clotting mechanisms.

Objective: To evaluate the *in vitro* anticoagulant activity of methanolic extract of *Ficus hispida* bark

Methods: The fresh, healthy bark of *F. hispida* was collected and rinsed with tap water. The cleaned bark was dried in an oven at 40°C and finely ground into powder using an electric grinder. The methanol extract of *F. hispida* was obtained by combining 40 g of dry powder with 250 mL methanol (solute to solvent ratio of 1:6.25) at 55°C for 3 hours using a Soxhlet apparatus. Then the extract was evaporated by a rotary evaporator and redissolved in 2.4 mg/mL of Tris buffer at pH 7.4. Venous blood samples were collected from six healthy volunteers in sodium-citrated tubes and subjected to plasma separation by centrifugation at 3000 rpm for 15 minutes. The anticoagulant efficacy of extracted plant material was evaluated by prothrombin time measurement. Data were analysed by one-way ANOVA using SPSS version 18.0.

Results: The extraction yield of methanolic extract of *F. hispida* bark was 15%. The methanolic extract showed an anticoagulant potential on pooled human plasma by elevating the prothrombin time in a concentration-dependent manner by 3.00, 12.07, 22.67, and 64.20 sec at a concentration of 156.25, 312.5, 625 and 1250 µg/mL, respectively. Furthermore, statistical analysis indicated that methanol extract of *F. hispida* bark has a significant (p=0.001) anticoagulant effect on human plasma at a concentration above 312.5 µg/mL compared to negative control prothrombin time of 15.8 sec.

Conclusions: Methanolic extract of *F. hispida* bark showed an anticoagulant effect on pooled human plasma in a concentration-dependent manner; further studies on compound purification and characterization are recommended to find the active anticoagulant compound.

Keywords: *Anticoagulant activity, Bark, Ficus hispida, Methanol extract, Prothrombin time test*

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Pre-analytical Errors in the Hematology Laboratory of Teaching Hospital Rathnapura: A Cross-sectional Study

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Background: A precise and accurate of laboratory report is essential for guiding towards better clinical decisions. Laboratory errors can cause delays in diagnosis and treatment. The pre-analytical phase, defined as the period from patient preparation through sample collection, transportation, and storage until the beginning of the analytical phase, is particularly prone to errors. Pre-analytical errors (PEs) are the most common type of errors in the Total Testing Process (TTP), accounting for about 70% of total laboratory errors.

Objective: To assess the PEs in the haematology laboratory in teaching hospital Rathnapura

Methods: A prospective cross-sectional study was conducted involving 21 600 samples from inpatient departments (IPD), received to the sample receiving counter of the haematology laboratory at teaching hospital Rathnapura. Results were expressed as frequencies and percentages. Chi-Square test was used to determine the significance among the variables using SPSS version 22.0.

Results: Clotted samples, insufficient samples, over volume samples, insufficient details, diluted, non-sample decomposed, haemolysed samples, incorrect details, without request forms, incorrect containers, incorrect samples, no label on samples were found as the PEs. The overall percentage of PE was 2.81% (607/21600). Among these, the most frequent error was clotted samples (2.02%, 437/21600) followed by insufficient samples (0.36%, 79/21600). The least issue was no proper labeling (0.004%). The majority of PEs were reported from medical (1.23%) and surgical (0.51%) wards among IPD. However, there was no statistical significance among the wards (p=0.153). Among the tests requested by IPD, full blood count was the most frequently rejected test due to clotting. The sample population was evenly distributed among gender. The highest incidence of PEs was reported for the samples of the patients aged 55-74 years.

Conclusion: Clotted samples and insufficient samples are the most commonly observed PEs, which are identified in the medical and surgical wards. The staffs who are engaged in collection, transportation and handling of the specimens should be well trained to reduce or minimize those errors.

***Keywords:** Error, Haematology, Laboratory, Pre-analytical, Total testing process*

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Calculation of Conversion Factors for the Number of Cells in Peripheral Blood Smear Microscopy to Determine Blood Cell Counts

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Background: Automated full blood cell count (FBC) is a common test. The precision of FBC is monitored by internal quality control (IQC). Manual visual counting of cells in blood smears using light microscopes (LM) is an IQC method. Conversion factors calculated by visual counting cells in blood smears are vary between cell types and LM due to the differences in field of view (FOV). Due to differences in FOV, one conversion factor cannot be used between different LM brands and types.

Objective: To determine conversion factors for automated cell counts estimated from cell counts in blood smears using different LM

Methods: EDTA blood samples (n=30) and their FBC results by Mindray BC 5150 analyzer were obtained. Manual cell counting was performed using Leishman-stained blood smears on Olympus CX 23, CX 31, CX 43, Euromax, LaboMed, and Carl Zeiss microscopes. Red cells and platelets in ten oil immersion fields and white cells in ten high-power fields were counted to obtain mean manual cell counts for each sample. Duplicate counting was done to eliminate any personal errors. The conversion factors were calculated by dividing automated cell count by the corresponding manual mean count.

Results: The conversion factor for platelet count was 13 000 for all except the Carl Zeiss microscope (12 000). The conversion factor for red blood cells was 1.4 for all except the LaboMed microscope (1.3). The conversion factor for total white blood cell count was 4000 for all the six microscopes.

Conclusions: This study generated conversion factors for different microscopes and cell types for Mindray BC 5150 analyzer. Further studies are needed to evaluate the application of these conversion factors.

Keywords: *Automated full blood cell counts, Conversion factor, Light microscopes, Manual visual blood cell count, Peripheral blood smear*

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Phytochemical Screening and Determination of *in vitro* Antioxidant Potential of Aqueous Leaf Extract of *Camellia sinensis*

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Background: *Camellia sinensis*, commonly known as the tea plant, is a species of evergreen shrub native to Asia. It is not only one of the most popular beverages consumed in Sri Lanka, but it has also variously reported health benefits such as antidiabetic, anti-inflammatory, anti-ageing, antibacterial, antiviral, hypocholesterolemic, anticarcinogenic and chemopreventive properties.

Objectives: To determine phytochemicals in the aqueous extract of *C. sinensis* leaves (AECL) qualitatively and quantitatively. Further, the study determined the antioxidant effect of AECL, as supportive evidence for developing an anti-ageing cosmetic cream formula in future

Methods: The qualitative phytochemical screening was done following standard methods. The flavonoids and total phenol contents were determined quantitatively by the Aluminium chloride method and the Folin-Ciocalteu (FC) method, respectively. Quercetin and Gallic acid were used as reference compounds respectively in Aluminium chloride and FC method. The *in vitro* antioxidant activity was assessed by 1,1-diphenyl-2-picrylhydrazyl (DPPH) assay and the radical scavenging activity of the test sample was expressed as an IC_{50}, which is defined as the mean concentration of the antioxidants required to lower the initial DPPH concentration by 50%.

Results: The results showed that AECL is rich in various phytochemicals such as alkaloids, flavonoids, tannins, and phenolics, with the absence of saponin. The total phenol content present in AECL was 93.075±2.3 mg Gallic acid equivalent/g dried weight and the total flavonoids were 942±1 mg quercetin equivalent/g dried weight. The study showed that AECL has dose-dependent antioxidant activity with an IC_{50} value of 211.53 µg/mL. It was 14.44 µg/mL for Ascorbic acid which was the positive standard.

Conclusions: The results showed the antioxidant properties of crude AECL. This antioxidant activity may be due to the presence of phytoconstituents such as alkaloids, flavonoids, tannins, and phenolics. However, as the AECL contain phytochemicals which can create an antioxidant activity, it is recommended to incorporate it for the developing cosmetic cream formula. However, the antioxidant activity was less compared to the Ascorbic acid which was the positive control.

Keywords: *Antioxidants, Camellia sinensis, Flavonoids, Phenol, Tea*

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Prevalence of Dyslipidemia in Women with Polycystic Ovarian Syndrome Attending Teaching Hospital Jaffna

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Background: Polycystic Ovarian Syndrome (PCOS), a common endocrine disorder of women, often associated with dyslipidemia which increase the risk of cardiovascular diseases. Understanding and preventing dyslipidemia in PCOS women is crucial for improving their overall health.

Objective: To determine the prevalence of dyslipidemia among women with PCOS attending Teaching Hospital Jaffna

Methods: This was an analytical cross-sectional study. Convenient sampling method was used. Women diagnosed with PCOS (n=125) through ultrasound scanning were recruited based on Rotterdam criteria from Gynaecology and Subfertility clinics of teaching hospital Jaffna. Post-menopausal women and Females under 18 years were excluded. Height and weight were measured by standard methods; Serum Total Cholesterol (TC), Triglyceride (TG), by enzymatic method; HDL-Cholesterol (HDL-C) by precipitation method were measured. LDL-Cholesterol (LDL-C) was calculated by Friedewald formula. The data were analyzed using SPSS version 25.0.

Results: The mean±SD age of the women was 29.02±5.46 years. Among them majority were unemployed (66.4%) and married (88.8%). The mean±SD Body Mass Index of the women was 27.75±5.69 kg/m^2, which was in the obese level (≥27.5 kg/m^2). Of all participants, elevated levels of TG (≥1.71 mmol/L, 12%), TC (≥5.18 mmol/L, 41.6%), LDL-C (≥2.60 mmol/L, 89.6%), and 91.2% were with low HDL-C (≤1.55 mmol/L). The most common abnormality was raised LDL coupled with low HDL (82.4%). Combinations of all four abnormal lipid parameters were observed only in 5.6% of the women while only 1.6% had all measured lipid levels at normal levels.

Conclusions: The study underscores the high prevalence and varied dyslipidemia patterns among PCOS women, with 98.4% exhibiting at least one type of dyslipidemia pattern, particularly elevations in LDL-C and reductions in HDL-C. Further investigation into factors contributing to dyslipidemia high incidence; customized management and awareness is needed for early detection of cardiovascular diseases in PCOS women.

Keywords: *Dyslipidemia, Polycystic ovarian syndrome, Prevalence*

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Stability of Total Cholesterol, Triglycerides in Serum, and Glucose in Plasma under Different Storage Conditions

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Background: Ensuring the stability of biomolecules in serum and plasma is vital for the accuracy and reliability of clinical diagnostic tests, particularly in the assessment of lipid profile parameters and glucose concentration.

Objectives: To determine the stability of total cholesterol, and triglycerides in serum and glucose in plasma of healthy individuals under different storage conditions

Methods: Venous blood samples were collected from 30 healthy undergraduates, aged 20-50 years after a 12-hour fast. Separated serum and plasma samples were stored at refrigerator (2-8°C) and room temperature (25-30°C). Glucose and lipid parameters were estimated using spectrophotometric assay kits at different time points (1-hour, 4-hour, 6-hour, and 24-hour). Values obtained at 1-hour time point were considered as reference values. A paired t-test was used to compare the mean values of the analytes. Analysis of variance followed by Tukey HSD was used to assess the significant differences among the means of multiple analyte groups. Data were analyzed using SPSS.

Results: Mean±SD plasma glucose concentration at room temperature at 1-hour (84.03±7.63 mg/dL) was significantly different from the mean plasma glucose concentration obtained at refrigerated temperature at 1-hour (81.90±7.24 mg/dL), showing a percentage difference of 0.072% (p=0.05). There were no significant differences in mean serum total cholesterol (p=0.633) and mean serum triglycerides (p=0.246) between the aforesaid temperatures at 1-hour time point. There were significant differences in plasma glucose concentrations obtained at 24-hour at room temperature (-10.03%, p=0.001) and 6-hour at refrigerated temperature (-8.79%, p=0.003) compared to the reference. There were significant differences in serum total cholesterol concentration at 4-hour (-12.55%, p=0.001) and serum triglycerides concentration at 24-hour (-29.18%, p=0.001) at room temperature. There were no differences for both serum total cholesterol and triglyceride values (p>0.05) at the other mentioned time points, stored at refrigerated temperature.

Conclusions: Estimation of plasma glucose is recommended to be conducted within 6-hours at room temperature to maintain the stability and recommended to be stored in refrigerator, if delay in analysis for more than 6-hours. The serum sample is recommended to be analyzed within 1-hour of collection at room temperature for total cholesterol concentration while serum triglyceride concentrations are recommended to be analyzed within 6-hour in the same temperature conditions to obtain accurate and reliable results.

Keywords: *Plasma glucose concentration, Serum total cholesterol, Serum triglycerides, Storage temperature, Storage time point*

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Carbapenemase Producing Gram Negative Bacilli Causing Urinary Tract Infections, in National Hospital, Colombo, Sri Lanka

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Background: Urinary tract infections (UTIs) are a major problem all around the world. Most of the UTIs are caused by Gram-negative bacilli (GNB). Carbapenem drugs are the last line of defense against UTIs caused by GNB. Determining the prevalence of carbapenem resistance GNB-causing UTIs is essential, as they have become resistant to a range of antibiotics.

Objectives: To evaluate the presence of carbapenemase-producing GNB (CP-GNB) and to identify the antibiotic susceptibility patterns of GNB-causing UTIs at the National Hospital, Colombo, Sri Lanka

Methods: This study included 142 GNB isolates (urine). Gram staining was performed to identify GNB isolates taken from Cystine Lactose Electrolyte deficient medium. Oxidase test was done to differentiate *Pseudomonas aeruginosa* from Enterobacteriaceae. Antibiotic susceptibility patterns were identified by the Disc diffusion method. Carbapenemase production was determined by carbapenem inactivation method (mCIM). The data were analyzed using SPSS version 29.0.2.0. Chi-square method and descriptive statistics were used.

Results: Out of 142 GNB isolates, the commonest were Enterobacteriaceae, 125 (88.03%). The other 17 (11.97 %) isolates were *P. aeruginosa.* Among total GNB isolates, 27.46% were positive for mCIM test, and 64.09% were negative for mCIM. Out of total Enterobacteriaceae, 30 (24.0%) were mCIM positive, 10 (8.0%) were mCIM intermediate, 85 (68.0%) were mCIM negative. Out of total *P. aeruginosa*, 9 (52.94%) were mCIM positive, 2 (11.76%) were mCIM intermediate and 6 (35.30%) were mCIM negative. They also showed significant resistance to cefuroxime (30 µg), cefpodoxime (10 µg), Amoxicillin-clavulanic acid (30 µg), and ciprofloxacin (5 µg) (p<0.001). The mCIM-negative isolates showed significant resistance towards nalidixic acid (30 µg), and ciprofloxacin (5 µg) (p<0.001).

Conclusion: CP-GNB showed significant resistance to several routinely used antibiotics.

Keywords: *Carbapenemase, Carbapenem resistance, Enterobacteriaceae, Pseudomonas aeruginosa, Urinary tract infections*

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Retrospective Analysis of MRI-Based Contralateral Breast Density and Morphometric Features: Influence on Invasive Ductal and Lobular Carcinomas

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Background: Invasive Ductal Carcinoma (IDC) and Invasive Lobular Carcinoma (ILC) are the most common types of Invasive Breast Cancers (IBC), known for their aggressiveness. Breast density (BD) is a significant risk factor for breast cancer.

Objectives: To utilize Magnetic Resonance Imaging (MRI) to investigate the influence of BD and other morphometric features of the Contralateral Breast (CLB) on patients diagnosed with IDC and ILC

Methods: This retrospective study involved female patients aged 40 years or older, sourced from the Cancer Imaging Archive database according to the purpose of the study. Pre-contrast axial T1-weighted images were processed using 3D Slicer software to create 3D images of the CLB. Regions of interest within the CLB were manually selected, with approval from a board-certified radiologist to ensure accuracy and consistency. These 3D images were used to measure total breast volume, glandular tissue volume, BD, breast surface area, and glandular tissue surface area. MRI BD was calculated as the ratio of fibro-glandular tissue volume to total breast volume. Data analysis was performed using Python 3.12, employing an ANOVA f-test to assess the impact of MRI BD and morphometric features on IBCs, with the critical f-value determined from the tabular f distribution for analysis.

Results: A cohort of 144 female patients (mean age 51.64 years) who underwent breast MRI (118 with IDC and 26 with ILC) was studied. Analysis of breast volume (f-value = 2.358518), glandular tissue volume (f-value = 0.542159), surface area (f-value = 1.387352), glandular tissue surface area (f-value = 1.085903), and MRI BD (f-value = 0.038482) revealed f-values below the critical threshold of 3.8815.

Conclusions: The study found no statistically significant influence of MRI BD and other morphometric features of the CLB on the occurrence of IDC and ILC.

Keywords: *Breast density, Invasive breast carcinoma, Invasive ductal carcinoma, Invasive lobular carcinoma, Magnetic resonance imaging*

Theme: Public Health

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Characteristics of School-aged Children with Asthma Exacerbation who Seek Treatments from Lady Ridgway Hospital, Sri Lanka

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Background: Asthma is a chronic inflammatory condition that causes reversible narrowing and constriction of the airways due to various stimuli. Asthma exacerbation is a sudden worsening of asthma symptoms. Identification of the characteristics of school-aged children with asthma exacerbations are key to early detection, preventing complications, and enhancing overall quality of life for children with asthma.

Objective: To determine characteristics of school-aged children with asthma exacerbation who seek treatments from Lady Ridgway Hospital, Sri Lanka

Methods: A descriptive cross-sectional study was conducted among conveniently selected 173 school-aged children (5 to 13 years) who seek treatment for asthma exacerbation from general pediatric ward, Lady Ridgway Hospital, Sri Lanka. Data were collected from parents of selected children using an interviewer-administered questionnaire. The diagnosis of asthma in children was made by the pediatrician in the ward. Descriptive statistics such as frequency, and percentage were used for data analysis using SPSS version 25.0.

Results: Nearly half of the children (51%, n=89), were males and 76% (n=132) of them, belong to early school age group (5-8 years). Majority lived in urban areas (64%, n=110). Of the participants, 70% (n=121) were currently not using inhalers and 60% (n=103) had a history of previous hospital admissions due to asthma attack. Thiry eight children (29%) reported a family history of asthma and 79% of them had asthmatic fathers. About 75% (n=130) had pets at home. Moreover, 69% (n=120) did not attend follow-up clinics.

Conclusions: The study findings highlight a predominantly early school-aged urban population with asthma, where a significant proportion do not use inhalers despite previous hospital admissions. Family history of asthma and pet ownership were common, while a significant portion did not attend follow-up clinics, suggesting gaps in asthma management.

Keywords: *Asthma, Asthma attack, Exacerbation, School-age children*

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Knowledge on Dental Fluorosis among School Children in Dimbulagala Educational Zone

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Background: Dental fluorosis (DF) is a condition that causes discolorations in the teeth enamel seen in some areas in Sri Lanka. DF is characterized as an abnormality in the formation of the enamel structure due to over-exposure to high quantities of fluoride.

Objectives: To assess the knowledge level of DF and associated factors among school children in Dimbulagala Educational Zone

Methods: A total of 273 children (12-14 years) were enrolled from three randomly selected schools in Dimbulagala Zone. A descriptive cross-sectional study was conducted using a self-administered pre-tested questionnaire. The knowledge level on DF was measured using 11 questions regarding the causes, signs, treatments, and preventive methods of the condition. Data were analyzed using SPSS version 25.0 and Chi-square test was used to find the associations.

Results: The majority (53.48%, n=146) were female and most of the children (97.8%, n=267) lived in rural areas. The majority (96%), n=262) had inadequate knowledge and only 4% (n=11) had moderately adequate knowledge about DF. Out of all, 67.4% (n=184) were not aware of DF and 77.3% (n=211) were not aware that DF has no cure. Majority of them (56.4%, n=154) were not aware that water source could cause DF. There was a statistically significant association between living area (p=0.001) and knowledge level. There was no association between knowledge level about DF and grade (p=0.294), school (p=0.515), division (p=515), parents' occupation (p=0.886), monthly income (p=0.643) and gender (p=0.643). The knowledge on DF was comparatively higher among students in urban areas compared to those in rural areas.

Conclusion: The majority of students had inadequate knowledge about DF. Therefore, it is important to initiate awareness programs to enhance children's knowledge on DF.

***Keywords:** Dental fluorosis, Knowledge, School children*

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Prevalence and Causes of Pregnancy-related Anxiety in Low Middle-income Countries: A Review of Literature

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Background: Pregnancy-related Anxiety (PRA) has been described as a normal experience in the anticipation of childbirth. When the anxiety level becomes severe, it results in negative behavioural outcomes. It also increases the toll on the healthcare system. Studies have indicated that PRA is different from general anxiety and depression. Unfortunately, most research studies have focused on maternal depression, leaving a huge vacuum to study PRA. Further, in low middle-income countries (LMIC) there is a dearth of studies on the prevalence of PRA in LMIC.

Objective: To identify the prevalence and causes of PRA among pregnant women in LMIC

Methods: A comprehensive literature search was conducted in databases such as PubMed, Google Scholar, Elsevier, and SCOPUS from 2012- 2024. A descriptive literature review approach was employed to understand the prevalence of PRA among pregnant women in LMIC using 20 articles.

Results: The overall prevalence of PRA in LMIC was 29.2% for antenatal and 24.4% for postnatal. Specifying to countries, India found a 55.7% prevalence, Tanzania found a 6.1% prevalence, Ethiopia found a 43.9% prevalence, and in Rwanda, 28.2% of symptoms were associated with anxiety. The increased financial burden, low socio-economic status, less social support, and stressful situations have been identified as the contributing factors to the PRA.

Conclusion: Findings underscore the significant concern about PRA in LMIC. Several factors influence the prevalence of PRA, and the potential impact on mother and child is a pressing issue. This study highlights the necessity of screening for PRA and providing necessary intervention. Further research is strongly recommended to understand PRA in these regions better and develop effective interventions.

Keywords: *Anxiety, Causes, Low middle-income countries, Pregnancy, Prevalence*

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The Experience of Childhood Maltreatment among Emerging Adults in Colombo District, Sri Lanka: A Cross-sectional Study

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Background: WHO defines child maltreatment as the abuse and neglect that occurs to children under 18 years of age which results in actual or potential harm to the child's health, survival, development or dignity. As per the observational studies done on those with aged 18 to 29 is known as emerging adults who were exposed to maltreatment, show a lot of psychological and social issues all around the world. There is a paucity of evidence regarding the area of child maltreatment among emerging adults in Sri Lanka.

Objective: To determine the experience of childhood maltreatment among emerging adults in Colombo district

Methods: The descriptive cross-sectional study was conducted among 384 emerging adults in Colombo district using the convenience sampling method. The sample was taken from university students and students in vocational training centers in Colombo district. Data were collected using a self-administered questionnaire. Childhood maltreatment was measured using the Childhood Trauma Questionnaire-Short Form (CTQ-SF) which captures the childhood experience of physical abuse, sexual abuse, emotional abuse, and physical and emotional neglect. The cut-off scores were given to each subdomain to determine the abusiveness or neglect (>12=emotionally abuse, >9 = physical abuse, >7 = sexually abuse, >14 = emotionally neglect, >9 = physical neglect).

Results: The majority of participants were males (n=226, 58.9%) with the mean±SD age of 23±3 years. Of them, 67.2% (n=258) of emerging adults revealed childhood experiences of maltreatment, and most of the emerging adults were confronted with physical neglect (n=344, 89.6%), and physical abuse (n=193, 50.3%) in their childhood. Apart from that 19% (n=73) of sexual abuse, 39.1% (n=150) of emotional abuse, and 18.2% (n=70) of emotional neglect emerging adults were reported in Colombo district.

Conclusion: The study concluded that one out of every three emerging adults in Colombo was victimized to childhood maltreatment. Hence, all the government and non-government authorities need to develop new strategies to prevent child maltreatment.

Keywords: *Emerging adults, Maltreatment, Physical neglect*

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Potentially Malignant Oral Disorders among Community-dwelling Adults in Estate Communities in Galle District, Sri Lanka: Prevalence and Patient Characteristics

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Background: Lip, tongue, and mouth cancers are one of the most common type of cancer in Sri Lanka mostly associated with, male gender, poor socio-economic status such as estate sector. This is the most common type of cancer among Sri Lankan males. Screening of potentially malignant oral disorders (PMOD) is a cost-effective strategy to reduce the burden of such cancers.

Objectives: To assess the prevalence and patient characteristics of PMOD among community-dwelling adults in tea estate communities of Galle district

Methods: A cross-sectional survey was conducted with the participation of 178 community dwellers of tea estate sector aged over 35 years in Galle district. An interviewer-administered questionnaire was administered while screening of PMOD was done by a dentist. The cluster sampling method was used when selecting the sample. The questionnaire consisted of five sections: sociodemographic data, nutritional status, habits for developing and related to PMOD and oral cancers, symptoms of PMOD and oral cancers, and observations related to the PMODs. Prevalence was mentioned as percentages, while the associated factors were identified using Chi-square/Fisher's exact test.

Results: The mean age of the study sample was 56 years. The prevalence of PMODs was 4.49% (n=8). Among them burning sensation (3.4%, n=6), white lesions (2.2%, n=4), red lesions (2.8%, n=5) and non-healing ulcers (4.5%, n=8) were observed. PMODs were mostly seen among males (8.8%, 6/68), Tamils (5.2%, 8/154), aged >75 years (9.5%, 2/21). PMODs were more prevalent among the people who do not eat fruits daily (5.2%, 7/134). PMODs were common among those consume alcohol (7.5%, 4/53), smoke (11.1%, 3/27) and chew beetles (4.7%, 5/107). PMODs were more prevalent among the employed participants (6.7%, 6/90).

Conclusions: The prevalence of PMODs among the estate community is very low. Screening of larger number of community dwellers is recommended and public health education and health promotion strategies for deprived communities to improve the oral health to prevent oral cancers is important.

Keywords: *Dietary pattern, Lifestyle habits, Patient characteristics, Potentially malignant oral disorders, Prevalence*

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The Assessment of Aggressiveness among Emerging Adults in Colombo District: A Descriptive Cross-sectional Study

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Background: The American Psychological Association defines aggression as a behavior aimed at harming others physically or psychologically. Emerging adults known as individuals aged 18 to 29 are in a stage of life that involves many life transitions and usually, they struggle with numerous physical, emotional, and social stressors that can lead to aggression.

Objective: To assess the aggressiveness among emerging adults in Colombo district

Methods: A descriptive cross-sectional study was conducted among conveniently enrolled 353 emerging adults in Colombo district. Data were collected using a self-administered questionnaire after doing face validity and pre-test to validate the questionnaire. Apart from the demographic factors, aggressiveness (physical aggression, verbal aggression, anger, and hostility) was measured using a self-administered Buss and Perry aggression questionnaire (PBAQ). The level of aggression was classed as severe (≥95), moderate (65-95), and low (≤65) based on the PBAQ score (ranged 29-45). Due to the descriptive nature of the data, descriptive analysis was carried out.

Results: Most of the participants were (60%, n=215) female with the mean±SD age of 21±3 years. The mean PBAQ score (SD) was 107.44±27.52 and 67% (n=238) reported severe aggression, 21% moderate, and 12% low level of aggression. The mean±SD scores for anger, physical aggression, verbal aggression, and hostility subdomains were 25.85±6.64, 25.85±6.64, 19.1±5.6 and 30.81±8, respectively. Of the participants, 62% (n=219) exhibited anger, 61% (n=216) physical aggression, 59% (n=211) verbal aggression, and 62% (n=220) hostility.

Conclusion: The majority of emerging adults exhibited severe aggression. Since continuous aggressive behaviours are directly affecting deteriorating individuals' physical and mental health evidence-based strategies to manage aggression are instrumental in supporting the well-being of emerging adults.

Keywords: *Aggressiveness, Anger, Emerging adults, Verbal aggression*

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Neurobiological Aspect of Cognitive Impairment in Substance Addiction

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Background: Despite its negative consequences, substance addiction is a persistent, relapsing disorder characterized by compulsive drug-seeking behaviour. Substance use and addiction have been rapidly increasing public health problems all over the world. According to empirical evidence, substances directly affect individuals' memory, attention, decision-making, and executive functions, impacting various regions of the brain. Neural circuitry and neurotransmitter changes associated with substance addiction are leading causes of cognitive impairment.

Objective: To reveal the specific neural mechanisms associated with cognitive deficits in the human brain

Methods: Scientific evidence was gathered by referring to more than 20 articles that are included in Google Scholar, PubMed, and ELSEVIER databases. This study was mainly conducted by referring to scientific articles that have been published within 10 years.

Results: Results revealed that the ventral tegmental area and nucleus accumbens internalize the reward stimuli regulating the dopaminergic system that can be induced by psychoactive substances. Then, long-term substance use associated with serotonergic and GABA activity leads to changes in the executive functions in the prefrontal cortex and the inhibitory control.

Conclusion: Considering the empirical evidence, prolonged usage of substances is capable of deteriorating individuals' cognitive functions drastically. Hence, a multidisciplinary approach including neurology, genetics, public health, and psychology is a crucial requirement to manage these substance-related cognitive impairments. Early identification can be used to mitigate the severity of the impairments.

Keywords: *Executive functions, Neurotransmitters, Prefrontal cortex, Substance*

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Exploring the Impact of Inflation on Psychosocial Well-being among Low-Income Families in the Context of Sri Lanka: Narrative Review

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Background: Inflation, as a pervasive economic phenomenon, poses significant challenges for low-income families, particularly in developing countries like Sri Lanka. This study aims to elucidate the multifaceted impact of inflation on the psychosocial well-being of low-income households in Sri Lanka, focusing on consumer behavior, education, poverty, and overall well-being.

Objectives: To determine the impact of inflation on psychosocial well-being among low-income families in the context of Sri Lanka

Methods: A comprehensive literature search was conducted, encompassing more than 25 scholarly articles, government reports, and empirical studies examining the nexus between inflation and psychosocial well-being among low-income families in Sri Lanka. Key databases including PubMed, Google Scholar, and ERIC were utilized to identify relevant publications.

Results: Results revealed that inflationary pressures significantly impact the psychosocial well-being of low-income families in Sri Lanka. Consumer behavior has been influenced by rising prices, leading to adjustments in spending patterns and heightened financial stress. Inflationary pressures also affect the affordability and accessibility of education, contributing to barriers in educational attainment among economically disadvantaged populations. Furthermore, inflation caused to exacerbate poverty levels, marginalizing vulnerable communities and increasing feelings of financial insecurity. As per the psychological consequences, inflation has been affected to increase stress, anxiety, and overall diminished well-being among low-income households.

Conclusion: Inflation has directly affected individuals' psychosocial well-being in many ways. Hence, by recognizing the complex interplay between inflation and psychosocial well-being, policymakers and stakeholders should work towards creating a more equitable and inclusive society for all Sri Lankans.

Keywords: *Inflation, Low-income countries, Poverty, Psychosocial well-being*

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Prevalence of Obesity and Its Relationship with Lifestyle Patterns among Community Dwellers in North Mudukatuwa Grama Niladari Division of Puttalam District in Sri Lanka

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Background: Non-communicable diseases pose a significant health challenge globally, often stemming from unhealthy lifestyle choices and genetic predispositions, notably leading to overweight and obesity. This aspect is not adequately studied in rural settings in Sri Lanka.

Objectives: To determine the prevalence of obesity and its relationship with lifestyle patterns especially physical activity (PA) and dietary intake among community-dwellers of the North Mudukatuwa Grama Niladhari division in Puttalam district

Methods: A descriptive cross-sectional study was conducted with 290 (calculated considering previously identified prevalence of obesity in a Sri Lankan cohort) randomly selected community-dwellers aged 18-65 years excluding the mentally incapacitated, seriously ill, pregnant, and lactating. Body mass index (BMI, kg/m^2) was measured. Overweight (23-24.9 kg/m^2) and obese ($\geq$25 kg/m^2) were identified using accepted BMI cut-offs for Asians. Locally validated brief dietary survey and International PA Questionnaire short version (IPAQ-SF) were administered. Levels of PA identified were as minimally active; <600MET/week, moderately active; 600MET-3000MET/week and Health-Enhancing Physical Activity (HEPA active); >3000MET/week). Recommended Dietary Allowance (RDA) was used as the cut-off for dietary intake. Data were analyzed using SPSS version 25.0 with descriptive statistics, the Chi-square test, and Pearson's correlation.

Results: The majority was female (68.6%) and aged between 40-60 years (45.9%). The prevalence of overweight and obesity was 58.3% and 16.6%, respectively. Most of them, consumed carbohydrates (93.8%) and fats (98.6%) more than the RDA and majority (86.9%) consumed fruits and vegetables less than RDA. The majority consume an adequate amount of protein. There was no association between BMI and intake of various food groups (p>0.05). Those who eat more carbohydrates and fats belong to overweight and obese groups. Of the sample, 48.3% were minimally active, 39% were moderately active, and 12.8% were HEPA active. A weak correlation was observed only between BMI and walking pattern (r=-0.14, p=0.01). Those who were minimally active were mostly seen in the category of overweight and obese.

Conclusion: A significant proportion of the studied sample was either overweight or obese. Physical activity patterns and dietary intake among the study group were beyond the acceptable cutoffs. The BMI was weakly correlated with walking pattern.

Keywords: *Community dwellers, Lifestyle patterns, Obesity, Prevalence, Puttalam district*

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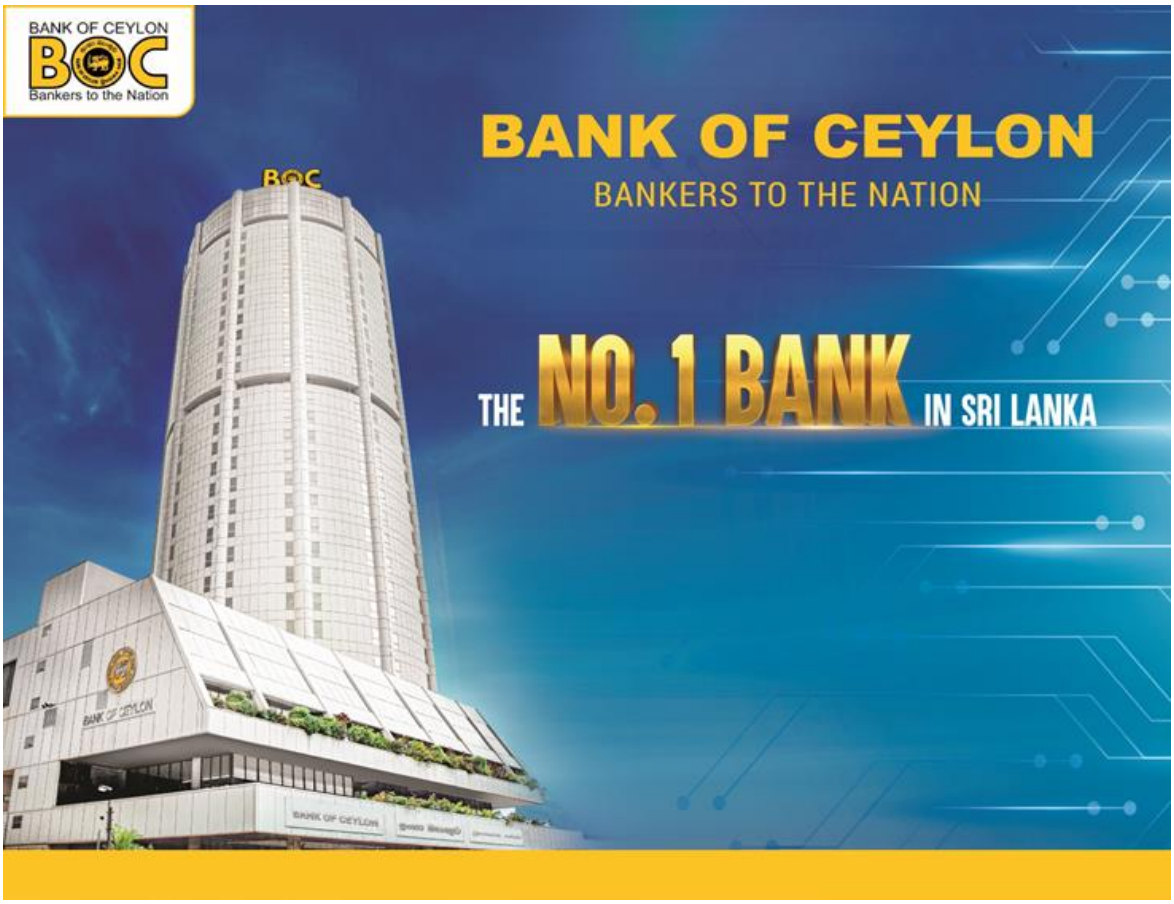
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