



**Proceedings of
International Research Symposium
Faculty of Allied Health Sciences**

University of Ruhuna



**“Health Research Beyond 75 Years of
Independence”**

November 10, 2023



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

iRuFARS - 2023

“Health Research Beyond 75 Years of Independence”

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Foreword

The International Research Symposium (iRuFARS-2023) was organized by the Faculty of Allied Health Sciences, University of Ruhuna, Sri Lanka. The abstracts and full papers arisen from diverse disciplines of Allied Health Sciences have been peer reviewed prior to acceptance. The abstracts and full papers have been edited to maintain language accuracy and page limits. Responsibilities of the content text of the abstracts and full papers included in this publication remain with the respective authors. No part of this serial publication will be reported in any form.

When citing the abstracts and full papers published, the serial publication is to be referred to as 'Proceedings of the International Research Symposium, Faculty of Allied Health Sciences, 2023, University of Ruhuna'.

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iRuFARS-2023

Message from the Keynote Speaker



An Overview of Worldwide Health Dilemmas: A Brief Introduction to Global Healthcare Challenges

Significant advancements, paradigm shifts, and technological innovations have shaped modern healthcare. Exploration of global health disparities, and the discourse illuminates the pervasive inequities that afflict health systems both inter and intra-nationally are timely imperative areas of global healthcare challenges. These inequities, characterised as preventable disparities, exert substantial influence on the health outcomes of diverse demographics. A critical revelation of the study underscores the detrimental repercussions of inadequate educational attainment on health literacy. This deficiency precipitates heightened incidences of hospital admissions, recurrent reliance on emergency medical services, and escalated mortality rates. Alarming, populations hailing from socioeconomically disadvantaged strata exhibit a propensity towards hazardous health practices and an apparent hesitancy in capitalising on preventive health measures.

Significant challenges exist within the healthcare sector, and I will describe these challenges by using the provision of mental health services as an example. Identified areas, such as deficit in proficient personnel, imbalances in resource allocation, restricted awareness of mental health within communities, and the persistent stigmatisation tethered to psychiatric conditions. These elements collectively erect impediments to efficacious therapeutic interventions, thereby exacerbating the chasm in treatment accessibility, predominantly within economically impoverished cohorts.

In relation to research, the consequences of not obtaining medical research data that truly reflects the entire population. This gap leads to several issues, including a lack of external validity and challenges in applying the findings broadly. It also prevents disadvantaged groups from benefiting from trial participation and hampers the analysis of how safe health promotion and care provisions are for different population sub-groups. Moreover, it obstructs the identification of groups most affected by illnesses, thereby limiting comprehension of the reasons behind these health disparities.

In response to these impediments, the discourse advocates for pioneering strategies such as 'task-shifting.' An example from the field of mental health is used to highlight this approach. This methodology entails the capacitation of non-specialist healthcare practitioners through specialised training in mental healthcare delivery. Recognised as a pragmatic recourse to the paucity of mental health specialists, even within affluent nations. Consequently, the emphasis is placed on the pragmatic approach of equipping frontline professionals, a strategy poised to yield enhanced sustainability and immediate, impactful outcomes.

Conclusively, specialised initiatives and educational curricula are described to counteract these healthcare adversities. An excellent example is NEUROCARE, an ambitious Capacity Building for Higher Education endeavour targeting Neurodegenerative Disorders within the Sri Lankan

demographic. This program encompasses the formulation of exhaustive academic modules and the continuation of professional development, tailored for healthcare academics and practitioners alike. Finally, I extend my sincere congratulations to the organising committee of the International Research Symposium of the Faculty of Allied Health Sciences, University of Ruhuna, for taking up the challenge of organising the first international research symposium during this significant economic crisis in Sri Lanka. This effort would provide excellent avenues for healthcare researchers in Sri Lanka to tackle the global healthcare challenges and enjoy the 75 years of independence as a nation.

Professor Martin Persson
Professor of Health Sciences
Faculty of Health Sciences
Kristianstad University
Sweden

Message from the Vice Chancellor and the Chief Guest



As the Vice Chancellor of the University of Ruhuna, I am truly delighted to extend my warmest greetings to the prestigious annual Research Symposium hosted by the Faculty of Allied Health Sciences, University of Ruhuna (iRuFARS-2023). It is with great enthusiasm that I acknowledge this significant occasion, which marks yet another milestone as you host an international research symposium, showcasing the remarkable progress and global reach of our academic community.

The Faculty of Allied Health Sciences holds a unique position as the youngest and vibrant addition to our academic institution. Its primary mission is to nurture and produce high-quality, technically proficient healthcare professionals, who are essential in meeting the evolving demands of modern healthcare.

In response to the rising need for advanced research capabilities among allied health professionals, the Faculty of Allied Health Sciences has undertaken a commendable initiative in organizing the annual research symposium. These symposia provide a valuable platform for emerging researchers to enhance their research skills, refine their communication abilities, and engage in peer reviews. Such research endeavors cultivate graduates with sharpened critical thinking and analytical prowess.

Beyond being a platform for scholars to share their discoveries with a wider audience, this symposium is a vital forum for fostering interactive discussions and sharing insights with fellow researchers, healthcare practitioners, and policymakers.

The theme of iRuFARS-2023, "Health Research Beyond 75 Years of Independence," highlights the crucial role of healthcare in eradicating poverty, achieving sustainable development, fostering economic growth, and building prosperous communities. Ensuring the health and well-being of populations is not only a global commitment outlined in the United Nations' Sustainable Development Goals, but it's also a fundamental human right as enshrined in the Universal Declaration of Human Rights.

However, the path to better health is not without its challenges, including poverty, limited healthcare resources, changing disease patterns, malpractice, and inadequate health knowledge. Overcoming these global health challenges demands clear goals and strategic solutions. At a time when our country is grappling with a unique financial crisis affecting the lives of our people, it is imperative that we adapt our healthcare trajectory to meet the evolving needs of humanity. This multidisciplinary symposium offers a significant opportunity to engage in a productive and scientific discussion to chart a path toward a more robust national healthcare system.

I wish to express my sincere gratitude to the organizing committee, under the able leadership of the Dean of the Faculty of Allied Health Sciences and the Chairperson of iRuFARS-2023. Their relentless efforts in organizing this Research Symposium for the sixth consecutive year, despite the challenges posed by the financial crisis, deserve our utmost appreciation.

With enthusiasm and optimism, I extend my best wishes for the success of the 6th Research Symposium of the Faculty of Allied Health Sciences, University of Ruhuna (iRuFARS-2023). I eagerly anticipate witnessing an engaging and fruitful symposium that will contribute to the advancement of knowledge in the field of healthcare with additional networking with communities providing such service globally.

Senior Professor T S D Amarasena
Vice Chancellor
University of Ruhuna

Message from the Dean, Faculty of Allied Health Sciences



In my capacity as the Dean of the Faculty of Allied Health Sciences at the University of Ruhuna, it is with great delight that I extend my warmest congratulations on the auspicious occasion of the 6th Research Symposium of our esteemed institution, iRuFARS-2023. This year's theme, "Health Research Beyond 75 Years of Independence," is a testament to our dedication to advancing multidisciplinary research within the realm of Allied Health Sciences. Notably, we have elevated our research conference to an international level, a significant milestone.

iRuFARS serves as a beacon of our unwavering commitment to the diverse and comprehensive landscape of research within Allied Health Sciences. The symposium proceedings proudly exhibit the results of numerous research initiatives undertaken not only by our university but also by other Higher Education Institutes. Over the past few years, the diligent efforts of our undergraduate students have played a pivotal role in nurturing a vibrant research culture. It is heartening to witness that a majority of the publications in this sixth research symposium showcase the exceptional research potential and talents of our graduating students. Through this endeavor, we aspire to foster a spirit of collaborative research on both national and global scales. I encourage each one of you to leverage this research conference as an ideal platform 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 realizing this event. The success of the symposium is a testament to the relentless dedication and hard work of numerous colleagues. I wish to express my heartfelt appreciation and gratitude to Dr. Bimba Wickramarachchi, Chairperson, and all the committee members of iRuFARS-2023 for their unwavering efforts in organizing this event amid the challenges posed by an economic crisis. The invaluable contributions of our reviewers and editorial board members are also greatly acknowledged.

To all the presenters, I extend my warmest congratulations and wish you the best of luck. This year, we are fortunate to gather in person following two consecutive virtual conferences in the last two years due to the prevailing circumstances and government-issued Covid-19 guidelines. I am confident that you will find this symposium to be as exciting and scientifically enriching as ever, now that we are back to our traditional way of convening.

In these challenging times, I implore you to prioritize your health and well-being and hold onto the hope for brighter days ahead.

Professor Imendra Kotapola

Dean

Faculty of Allied Health Sciences

University of Ruhuna

Message from the Chairperson RuFARS-2023



I am humbly proud and honoured to craft this message to the proceedings of the Ruhuna University Faculty of Allied Health Sciences International Research Symposium (iRuFARS-2023), themed “Health Research Beyond 75 years of Independence”, as the chairperson of the organizing committee.

Being the youngest faculty of the University of Ruhuna, the Faculty of Allied Health Sciences declared open the Ruhuna University Faculty of Allied Health Sciences Research Symposium (RuFARS) in 2018 and made it a cardinal calendar event. Remarking its consecutive sixth occurrence, we could proudly upgrade it up to an international research symposium in 2023. We sincerely hope that this expansion would enhance the quality and outcomes of this annual scientific event. Researchers and other stakeholders in the scientific community have the opportunity to physically, as well as virtually present and disseminate their findings in this event.

The symposium aimed at motivating national and international health professionals and undergraduates to present, discuss and share their cutting-edge research experiences with peers and the stake holders. By doing so, we hope to promote multidisciplinary research approach for sustainable development in population health. It would also support health researchers to share their knowledge and skills in innovations and creations which needs to uplift the health care services and quality of life of people.

The pre-congress workshop, inaugurated in parallel with the symposium, focuses on 'Healthy Aging' by examining the demographic trends of the nation over the past 75 years since independence, and raising awareness among health professionals with respect to the importance of a healthy older population. The workshop features local and international experts from the Neurocare team, making it a standout event.

The valuable advice and guidance of the Senior Professor Sujeewa Amarasena, Vice Chancellor, University of Ruhuna and Prof. E.P.S. Chandana, Deputy Vice Chancellor, University of Ruhuna and the hard work and dedication of Professor Imendra Kotapola, Dean FAHS, and all the members of organizing committees in drawing up the iRuFARS-2023 is gratefully acknowledged. Without them this brainchild would not have been tangible reality.

We do believe this symposium would make a valuable international level platform to disseminate research knowledge and experiences and will be beneficial in developing innovative solutions for the dynamic and unprecedented healthcare challenges. I wish iRuFARS-2023 a great success.

Dr. Bimba Wickramarachchi

Chairperson

iRuFARS-2023

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**Full Papers on Postgraduate Studies Completed by the
Academic Staff Members of the
Faculty of Allied Health Sciences, University of Ruhuna**

Evaluation of the Efficacy of Alcohol-Based Herbal Hand Rubs Against Selected Pathogens

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Abstract

Background: Hand hygiene products are designed for the application of inactivation or suppression of microorganisms.

Objective: To develop alcohol-based herbal hand rubs (ABHHRs) and to evaluate *in-vitro* and *in-vivo* antimicrobial efficacy

Methods: Four types of formulations (AF₁-AF₄) were prepared and stability testing was performed for three months at room temperature. *In-vitro* antimicrobial efficacy of prepared formulations against selected pathogens was also performed. The most active formulations were subjected to a phase II clinical trial (*in-vivo*) along with a self-administered questionnaire.

Results: The formulated ABHHRs were found to be homogenous, liquid, and milky white-pale yellow in colour with a pungent odour. Mean values of inhibition zones obtained for *in-vitro* antimicrobial efficacy test ranged from 10.00–34.67 and 11.00–37.00 mm for AF₁ and AF₃ respectively. The high values for AF₁ (34.67±1.15 and 22.67±0.58 mm) and AF₃ (37.00±1.73 and 21.33±0.58 mm) were obtained compared to positive (hand disinfectant market product, ethanol) and negative controls (distilled water, glycerin) against *C. albicans* and *S. aureus* respectively. AF₁ and AF₃ showed >96% reductions of colony-forming units (CFUs) in *in-vivo* efficacy testing. The majority of participants (>90%) had no hesitation, itching, irritation, rashes, or skin damage while >85% was no skin-drying and >65% of participants responded with a moisturizing effect.

Conclusion: The formulated ABHHRs have promising *in-vitro* and *in-vivo* antimicrobial activity against the tested pathogens with clinically proven safety, low skin sensitivity and compatibility on human volunteers.

Keywords: Antimicrobial efficacy, Clinical trial, Herbal hand rubs, Pathogens

Background

Hand hygiene is an important measure to prevent cross-transmission of microorganisms from one patient to another which demonstrating a reduction in infection rates after improvement in hand-hygiene practices [1]. The recommendations and guidelines state that healthcare professionals should clean their hands with an effective hand hygiene product before and after health-related work or patient contact [2]. Poor hand-hygiene practices are reported due to the lack of scientific knowledge, unawareness of risks, misconceptions, unavailability of hand hygiene facilities, understaffing, and patient overcrowding [3].

Hand hygiene may be accomplished by using alcohol-based hand rubs (ABHR), hand scrubs, soap, and running water [4]. Such preparations contain one or more types of alcohol, other active ingredients with excipients, and humectants. According to the revised guidelines for hand-hygiene, the use of an ABHR is the preferred method of hand hygiene [3]. Though the activity of ABHR is well explained, it is reported with adverse effects such as irritancy, dryness, redness, itching, and eczema [3]. These side effects can be mitigated by using a hand rub with natural moisturizing agents like medicinal aloe [5] which contains a vast amount of essential nutrients and vitamins giving excellent moisturizing properties while soothing dry skin. Utilizing the benefits of amino acids, the natural humectant retains moisture with the presence of sugar, water and polysaccharides. Therefore, combining an essential oil or natural plant extract play a vital role in the reduction of side effects and enhance antimicrobial activity. Studies have shown that certain essential oils extracted from plant extracts have promising antimicrobial activity against bacterial species and fungi [6]. Therefore, this study was aimed to develop alcohol-based herbal hand rubs and to evaluate *in-vitro* and *in-vivo* antimicrobial efficacy against selected pathogens.

Methods

Study design and setting

An experimental laboratory-based study was conducted at Medical Research Institute (MRI), Colombo and Faculty of Allied Health Sciences (FAHS), University of Ruhuna (UoR).

Materials

Glycerin, clove oil, cinnamon oil, ethanol, polysorbate 20, a commercially available hand disinfectant, Muller Hinton Agar and Blood agar were used for this study.

Aerial parts of the leaves of *Aloe vera* were collected in January 2020 from Ganegama, Baddegama, Galle. The herbarium specimen of medicinal aloe was authenticated by the Bandaranayke Memorial Ayurvedic Research Institute, Nawinna (14.02.2019.2030). The standard cultures [(*Escherichia coli* (ATCC 25922), *Enterobacter cloacae* (ATCC 23355), *Acinetobacter baumannii* (ATCC 19606), *Pseudomonas aeruginosa* (ATCC 27853), *Klebsiella pneumoniae* (ATCC 70603), *Proteus mirabilis* (ATCC 12453), *Streptococcus pyogenes* (ATCC 12384), *Enterococcus faecium* (ATCC 29212), *Staphylococcus aureus* (ATCC 25923) and *Candida albicans* (ATCC 10231)] and clinical isolates (*Salmonella enterica* Typhi and *Shigella sonnei*) were obtained from the Medical Research Institute.

Data collection methods and tools

After obtaining the informed consent, a set of employees [Medical Laboratory Technologists (MLTs) and Research Officers (ROs)] who were working in MRI were selected as the test group. Based on the references, this was a randomized control trial and there were 120 (30 volunteers per formula) volunteer participants in the experiment [7].

Extraction of Aloe vera gel

Defective leaves were discarded and the remaining leaves were used for the preparation of the extract. The extract of *A. vera* was prepared by blending flesh (250.0 g) in a small volume (3.0 mL) of distilled water [8-9].

Formulation of ABHHRs (AF₁ – AF₄)

Four ABHHRs (AF₁ - AF₄) were prepared and the compositions are given in Table 01.

Table 01: Compositions of ABHHRs

Ingredients	AF₁/ mL	AF₂/ mL	AF₃/ mL	AF₄/ mL
10% ethanol	70	70	70	70
Glycerin	05	05	-	-
Aloe extract	10	10	15	15
Clove oil	10	-	10	-
Cinnamon oil	-	10	-	10
Polysorbate 20	02	02	02	02
Distilled water	03	03	03	03
Total volume	100	100	100	100

Determination of physical stability

The appearance, colour and odour were measured at 0, 7, 30 and 90 days at room temperature. The pH was determined using 10.0 mL of formulations dissolved in 100.0 mL of distilled water separately and stored for 2 h over a period of 90 days [10].

Evaluation of in-vitro antimicrobial efficacy

Standard Agar well diffusion method was performed against selected pathogens to evaluate the *in-vitro* antimicrobial efficacy of prepared ABHHRs [9, 11-13]. An aliquot of 50.0 µl of each formulation (AF₁, AF₂, AF₃, AF₄), negative (distilled water - N₁, glycerin - N₂), and positive controls (hand disinfectant market product - P₁, ethanol - P₂) were seeded and incubated plates were calculated for inhibition zones using a calibrated Vernier caliper.

Evaluation of in-vivo antimicrobial efficacy

A sample size of 120 (30 per each formula) with a sampling method of randomized control trial [7, 9] was used. Inclusion criteria were, human volunteers, both sex and over 18 years was used and participants who have allergies, and other skin conditions were used as exclusion criteria. AF₁/AF₃ (most active formulations) was applied on the right thumb (n=30) of a human volunteer. At the same time positive (hand disinfectant market product) or negative control (water) was applied on left thumb (n=15) of human volunteers. Each formulation was used to evaluate for intervention before application, 10s and 15s after application of formula on the fingertip. Following incubation at 35±2°C for 16-18h, the colony counts were counted using a bacterial colony counter [8-9, 14].

As above, this clinical trial had been conducted on 1st day of preparation, after 15th and 30th days. After obtaining the written informed consent, it was distributed a self-administered questionnaire to identify skin safety, sensitivity and compatibility [9].

Data analysis

All experimental measurements were conducted in triplicates and results were expressed as mean (\pm SD). Significant levels ($p \leq 0.05$) in 95% confidence intervals were analyzed by multiple comparisons paired samples t-test using SPSS version 16.0.

Ethical considerations

Ethical approval (32/2015/11.09.2015 & 32/2015/08.02.2019) was granted by the Ethics Review Committee, MRI. Clinical trial approval (SLCTR/2019/016) was granted by the Sri Lanka Clinical Trial Registry (SLCTR).

Results

Determination of physical stability

The developed ABHHRs were found to be liquid, homogeneous, milky white to pale yellow in colour with a pungent odor. The pH of the developed formulations (AF₁-AF₄) ranged from 6.68 to 7.02.

Evaluation of in-vitro antimicrobial efficacy

Table 02: Zones of inhibition against selected pathogens

Formula	AF ₁	AF ₂	AF ₃	AF ₄	N ₁	N ₂	P ₁	P ₂
Pathogen	M \pm SD							
<i>E. coli</i>	10.30 \pm 0.58	0	11.30 \pm 0.58	0	0	0	0	0
<i>E. cloacae</i>	14.00 \pm 1.00	0	13.00 \pm 2.00	0	0	0	0	0
<i>A. baumannii</i>	20.00 \pm 2.00	10.00 \pm 0.00	22.30 \pm 2.52	0	0	0	0	0
<i>P. aeruginosa</i>	10.00 \pm 0.00	0	11.00 \pm 0.00	0	0	0	0	0
<i>K. pneumoniae</i>	0	0	11.00 \pm 1.70	0	0	0	0	0

<i>S. enterica</i> Typhi	16.00 ± 3.20	0	18.00 ± 5.30	0	0	0	0	0
<i>S. sonnei</i>	17.00 ± 3.00	10.30 ± 0.58	16.30 ± 5.13	8.00 ± 0.00	0	0	11.30 ± 2.31	0
<i>P. mirabilis</i>	20.30 ± 1.53	9.33 ± 1.15	20.00 ± 1.00	10.70 ± 1.16	0	0	0	0
<i>C. albicans</i>	34.67 ± 1.15	18.00 ± 1.00	37.00 ± 1.73	19.00 ± 0.00	0	0	12.00 ± 1.73	0
<i>S. pyogenes</i>	20.33 ± 0.58	10.33 ± 0.58	21.00 ± 1.00	11.33 ± 0.58	0	0	10.33 ± 0.58	0
<i>E. faecium</i>	13.00 ± 0.00	0	12.33 ± 0.58	0	0	0	11.00 ± 1.00	0
<i>S. aureus</i>	22.67 ± 0.58	12.00 ± 0.00	21.33 ± 0.58	12.33 ± 0.58	0	0	13.67 ± 0.58	0

AF: Alcohol-based Formula, ATCC: American type culture collection; N: Negative control; M: Mean; P: Positive control SD: Standard deviation

Evaluation of in-vivo antimicrobial efficacy

Table 03: Mean log₁₀ reduction values and reduction factors (RF)

	AF ₁		AF ₃	
	Mean (±SD) Log ₁₀ reduction of CFUs	Mean RF	Mean (±SD) Log ₁₀ reduction of CFUs	Mean RF
1 st day				
Before vs 10 s after application	1.69 ± 0.33	99.90%	1.21 ± 0.47	99.59%
Before vs 15 s after application	1.42 ± 0.33	99.42%	1.51 ± 0.47	99.62%
15 th day				
Before vs 10 s after application	1.66 ± 0.53	99.95%	1.50 ± 0.35	99.83%
Before vs 15 s after application	1.36 ± 0.53	99.86%	1.43 ± 0.35	99.57%
30 th day				
Before vs 10 s after application	1.02 ± 0.49	95.90%	1.43 ± 0.46	99.92%
Before vs 15 s after application	1.16 ± 0.49	99.78%	1.04 ± 0.46	99.80%

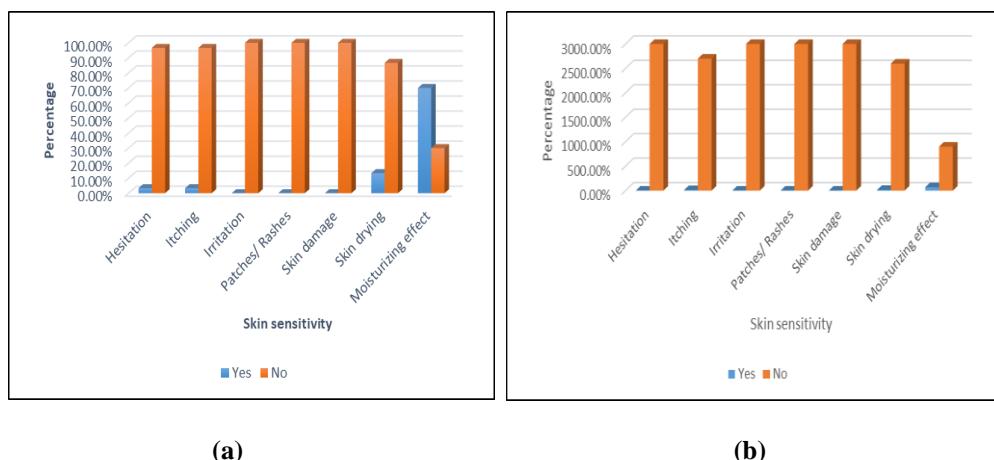


Figure 01: Skin sensitivity of human volunteers against (a) AF₁ and (b) AF₃

Discussion

Alcohol solutions containing 60–80% alcohol are usually considered to have efficacious microbicide activity, with concentrations higher than 90% less potent. Alcohol-based hand rubs with optimal antimicrobial efficacy usually contain 75 to 85% ethanol, isopropanol, n-propanol, or a combination of these products. WHO-recommended formulations contain either 75% v/v isopropanol, or 80% v/v ethanol. They also have excellent activity against *Mycobacterium* spp, a variety of viruses, including respiratory viruses (e.g., severe acute respiratory syndrome coronavirus [SARS- CoV], influenza), blood-borne viruses [15-16].

The selection of a hand hygiene product is an important factor according to the New Centers for Disease Control and Prevention Guidelines. Among the hand hygiene products, alcohol-based hygiene products (60-85% ethanol, 60-80% isopropanol and 60-80% n-propanol) are available at the market [15-16]. Although alcohol-based rubs are known to be more effective than others they are reported with many adverse effects such as irritancy, dryness, itchy etc. Therefore, this study was aimed to develop herbal hand rub formulations having antimicrobial activity, no irritation, no skin drying or damage in prolonged use, and have a moisturizing effect for a soothing effect.

The tested formulations they were showed no remarkable changes of the physical parameters tested during 90 days. The higher inhibition zones were observed for AF₁ and AF₃ compared to AF₂ and AF₄ (Table 02). Formulations of AF₁ and AF₃ which contain clove oil showed the highest activity against all tested pathogens compared to AF₂ and AF₄ which contain cinnamon oil. Seventy percent (70%) ethanol and negative controls (distilled water and glycerin) showed zero zones of inhibition against tested pathogens while the market product showed a zone of inhibition only against *S. sonnei*, *C. albicans*, *S. pyogenes*, *E. faecium* and *S. aureus*. A similar study conducted to formulate a poly-herbal soap and hand sanitizer using the leaf and bark extracts of *Cassia fistula*, *Ficus religiosa*, and *Milletia pinnata* had been evaluated for antimicrobial activity by using the Agar well diffusion method against the pathogens of *E. coli*, *S. aureus*, and *P. aeruginosa*. The results showed the zones of inhibition ranging from 18.0 to 26.0 mm which was far better than the zones of inhibition of individual extracts. This enrichment of antimicrobial

properties had been contributed to the synergistic effect produced by the combinations of extracts [10]. Further, another research study evaluated the antimicrobial efficacy of four different hand sanitizers against *S. aureus*, *S. epidermidis*, *P. aeruginosa*, *E. coli*, and *E. faecum* and compared the antimicrobial effectiveness among four different hand sanitizers. Maximum inhibition (22.0 ± 6.0 mm) was found with one hand sanitizer against all the tested organisms [17]. *In-vitro* testing of antimicrobial agents is beneficial in screening antimicrobial agents in product formulations because such agents that tested both *in-vitro* and *in-vivo* activity may have reduced antimicrobial effects when formulated into a hand clean perspective [18].

Mean \log_{10} reductions of CFUs were high before versus after 10 s as well 15 s application for AF₁ and AF₃ on 1st, 15th, and 30th days. The RFs were nearly 100% before versus after 10 s and 15 s applications for both AF₁ and AF₃ on 1st, 15th and 30th days. ABHHR formulations specifically showed high mean \log_{10} reductions of CFUs and RFs for novel formulations than the positive control according to the results given in Table 03. In agreement with the findings of a research study carried out in Canada, a 100% reduction of colonies for fingertip colony count for alcohol-based hand rubs was observed [14]. Efficacy had been evaluated for different brands of hand sanitizers against standard cultures of *E. coli*, *S. aureus*, and *P. aeruginosa* as per the European Norms in a similar study and the logarithmic RF were assessed at baseline and after treatment, and the results showed that the four hand sanitizers had a 5.9 RF on all three bacteria strains [19].

According to self-administered questionnaire, the majority of human volunteers are female (56.67%, and 63.33%) MLTs (93.33%, and 93.33%) between 18–30 years (86.67%, and 80.00%) age group for AF₁, and AF₃ respectively. With regards to Figure 01, all participants (> 90%) responded that there was no hesitation, itching, irritation, rashes, or skin damage while > 85% responded that there was no skin-drying condition for AF₁, and AF₃. More than 65% of participants responded that there was a moisturizing effect in all novel formulations.

In the medical environment, the use of ABHHR now represents the preferred method of performing hand hygiene when delivering non-surgical care. The ABHHR protocol is less costly and less time-consuming when compared to traditional hand washing [20]. Therefore, a hand rub with moisturizer should be there to minimize the adverse effects on the skin. According to the results, the newly prepared hand rubs are beneficial; since these contain essential oils that enhance the antimicrobial activity and address the moisturizing effect of medicinal aloe [8]. Thus, the majority of participants prefer to use these types of hand rubs in the daily working environment as they regularly complain of the irritant effects of the present products in the healthcare setting [21-22].

Conclusion

It is concluded that the formulated alcohol based herbal hand rubs are having antimicrobial effects against the tested pathogens and clinically proven skin sensitivity, safety, and compatibility in human volunteers. The findings revealed that the prepared formulations are efficacious, safe, and effective to be used in the healthcare setting.

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Oral Presentations

OP 01**Prediction of Viable CD34 Count in Harvested Product/Peripheral Blood by Peripheral Blood Progenitor Count of Automated Haematology Analyzer in Multiple Myeloma Patients Undergoing Autologous Peripheral Blood Stem Cell Transplantation**

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Background: Multiple myeloma (MM) is a clonal neoplastic disorder of plasma cells in the bone marrow. Autologous Peripheral Blood Stem Cell Transplantation (PBSCT) is one of the promising treatments of choice for MM. Success of PBSCT depends on the viable CD 34 cells (VCD34) harvested from peripheral blood. Therefore, optimal engraftment can be assured by improved estimation of CD 34 yield.

Objective: To assess the possibility of predicting VCD34 count in peripheral blood or harvested product by apheresis of MM patients by using hematopoietic progenitor cell counts (HPC) in peripheral blood (PB) from an automated hematology analyzer (AHA) compared to flowcytometry

Methods: MM patients of age 40-65 years, admitted to Bone Marrow Transplant Unit of a tertiary referral center were selected for the study (n=45). HPC in PB were enumerated using AHA and compared with VCD34 count obtained by flowcytometry in both PB and apheresis. Statistical analysis was performed using SPSS version 26.0. Data were separately tested for normalization, followed by bivariate correlation analysis and linear regression analysis.

Results: HPC in PB obtained from AHA and VCD34 in both PB and apheresis obtained from flowcytometry showed normal distribution. In the correlation bivariate analysis, HPC in PB showed significant strong positive correlations with parameters; VCD34 by flowcytometry of PB ($r=0.942$) and apheresis ($r=0.778$) ($p<0.01$). Equations were derived using regression analysis; VCD34 in PB by flowcytometry= 1.210 (HPC of PB by AHA) -1.750 ($R^2=0.891$) and VCD34 of apheresis by flowcytometry= 17.079 (HPC of PB by AHA) $+ 241.46$ ($R^2=0.660$).

Conclusions: HPC of PB by AHA can be used as a predictive marker to determine the VCD34 either in PB or apheresis as an alternative for flowcytometry. Further studies are required for the validation of these findings for clinical application.

Keywords: Autologous Peripheral Blood Stem Cell Transplantation, Flowcytometry, Hematopoietic Progenitor Cells, Multiple Myeloma

OP 02

Perceived Challenges of Clinical Supervision among Nurse Educators from Selected Nursing Schools in Sri Lanka

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Background: Clinical supervision is vital for preparing skilled nurses. This study explored nurse educators' perceptions in selected nursing schools in Sri Lanka to identify challenges in clinical supervision. The findings offer valuable insights for improving the quality of nursing education and clinical supervision.

Objective: To explore the perceived challenges of clinical supervision experienced by nurse educators in selected nursing schools in Sri Lanka

Methods: Descriptive qualitative design was used with a purposive sample of 24 nurse educators from three selected nursing schools in Sri Lanka. Three focus-group discussions, each lasting 60-90 minutes, were conducted until data saturation which was marked by the absence of new themes and the strong development and support of existing ones in the data. Thematic analysis was used to analyse data.

Results: Among 24 participants, most were females (87.5%) aged 36-55 years. Majority (75%) had 5-15 years of experience as nurse educators. Findings revealed five themes and eleven sub-themes related to the challenges encountered in clinical supervision. The themes were validated by member checking with participants. The identified themes were student readiness for clinical learning (students' reluctance, anxiety, and lack of motivation), facing challenges (resource constraints, time limitations, and scheduling difficulties), lack of administrative support (issues of staffing, facilities management, and professional development opportunities), clinical teaching, and feeling inadequate satisfaction (workload management and absence of supportive networks).

Conclusions: The study highlights the challenges encountered by nurse educators in clinical supervision and suggests improvements. Recommendations include targeting student readiness with preparation, support, and feedback; optimizing resources through efficient scheduling and group supervision; enhancing professional development and support networks; and securing administrative support to address staffing, facility management, and hospital collaboration issues.

Keywords: *Challenges, Clinical learning, Nurse educators, Nursing students, Sri Lanka*

OP 03

Prevalence of Positive Cultures in Premature Baby Unit at District General Hospital Matara: A Retrospective Study

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Background: Sepsis is a major cause of morbidity and mortality among babies in premature baby units (PBU). Periodic monitoring of antimicrobial sensitivity of the causative organisms in a particular setting is important for the early management of infections in neonates.

Objectives: To determine the proportion of blood culture positivity; to assess the factors associated with sepsis among the babies and to assess the causative microorganisms and their antibiotic susceptibility pattern, isolated in blood cultures of babies with suspected sepsis admitted to PBU at District General Hospital Matara (DGHM)

Methods: A retrospective study was conducted in microbiology laboratory of DGHM to review blood culture reports received from PBU. All the consecutive samples of PBU from 31st December 2022 until 01st January 2021 were taken into study. Culture isolates, antibiotic susceptibility patterns and other related data were collected and analyzed using Microsoft Excel and SPSS version 25.0.

Results: A total of 1612 blood culture reports were included in the study. Overall blood culture positivity was 9% (n=154). Among the positive cultures 125 (81.2%) isolates were bacteria, 3 (1.9%) were *Candida spp.* and the rest of the growth was considered as contaminants. Among bacterial isolates, 65.6% were gram positive cocci and 34.4% were gram negative bacilli. Common isolated organisms were coagulase-negative *Staphylococci* (51.6%), LF coliforms (11.2%), *Pseudomonas spp.* (8%), *Staphylococcus aureus* (7.2%), *Streptococcus spp.* (6.4%) and NLF coliforms (5.6%). Among gram negative organisms, 7% were Extended Spectrum Beta Lactamase produces, 4.7% were multi drug resistant and carbapenem resistance was seen in 40.5% of organisms. Among *Staphylococcus aureus* isolates, 55.6% were Methicillin Resistant *Staphylococcus aureus*. Prematurity ($p=0.017$), low birth weight ($p=0.002$) were significantly associated with culture positive sepsis.

Conclusions: Coagulase-negative *Staphylococci*, LF coliform, and *Pseudomonas spp.* were the predominant causative organisms. Ciprofloxacin and aminoglycosides were the most effective drugs against gram positive and negative bacteria.

Keywords: Antibiotic susceptibility pattern, Blood culture, Neonatal sepsis, Premature

OP 04

Perceptions and Challenges Encountered by Nursing Undergraduates During Clinical Training: A Study in a Selected University in Sri Lanka

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Background: Clinical experience is vital in nursing education for enhancing the clinical competence of undergraduate students. However, there is a lack of research evidence on how nursing undergraduates perceive their clinical experiences.

Objectives: To identify perception and challenges encountered by nursing undergraduates of the University of Sri Jayewardenepura, Sri Lanka during their clinical training

Methods: A descriptive quantitative design was employed, involving purposively selected nursing undergraduates (n=77) from the University of Sri Jayewardenepura. The sample included students in the 2nd, 3rd, and 4th years. Data were collected using a researcher-developed, pre-tested, self-administered questionnaire with open-ended questions. Descriptive and inductive analysis were used to analyse the data.

Results: The majority of participants were females (79.5%), with 4th year students comprising 46.2% of the sample. Most participants (72%) agreed that their clinical appointments were sufficient for enhancing their knowledge and skills. However, they expressed dissatisfaction with various aspects, including the availability of equipment (48%), facilities in hospitals (44%) and universities (50%) for clinical practice, and guidance from hospital nursing staff (60%). On the other hand, most participants (53%) agreed that the clinical supervision guidance provided by the university academic staff is adequate. Open-ended data revealed that most participants reported positive experiences in clinical training at specific hospitals, particularly Apeksha Hospital, where the nursing staff were noted to be supportive and encouraging. Identified challenges included transportation problems, inadequate rooms and meal facilities, and the need for procedure books. Open-ended data showed improving changing room facilities, assigning a graduate nurse or clinical instructor for support, and tailoring assessments to each clinical placement as suggestions.

Conclusions: The findings highlight the need to develop strategies to address resource inadequacies, foster positive attitudes, improve support and supervision to enhance nursing undergraduates' clinical training in Sri Lanka.

Keywords: *Challenges, Clinical learning, Sri Lanka, Undergraduate nursing student*

Acknowledgement: Research grant -ASP/01/RE/MED/2016/63

OP 05**Experiences of Mothers having a Child with Down Syndrome attending Pediatric Clinic at Teaching Hospital, Ratnapura, Sri Lanka**

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Background: Down syndrome is one of the most common genetic disorders. The needs and requirements of a child with Down syndrome go far beyond the needs of a normal child. Therefore, having a child with Down syndrome changes the lifestyle of the whole family. One of the parents, especially the mother, must spend more time and sacrifices to take care of the child. These mothers are at increased risk of stress, poor health status and weakened family relationships. Every mother reacts and behaves differently when raising a child with Down syndrome.

Objectives: To explore the physical, psychological and socio-economical experiences of the mothers having a child with Down syndrome attending to pediatric clinic at Teaching Hospital Ratnapura

Methods: Qualitative phenomenological design was utilized in this study. Sixteen mothers were purposively selected from the pediatric clinic at Teaching Hospital Ratnapura. Approximately one hour of semi-structured individual in-depth interviews were conducted using a pre-formulated theme list. The interviews were audio recorded and transcribed verbatim. Data were analysed using thematic analysis techniques.

Results: Three themes that emerged from the findings were lifestyle changes, positive and negative expectations and less society and community involvement. The need for support and less attention to self and family led to lifestyle changes. Mothers' negative expectations were unpredictable futures and poor acceptance. They considered living independently as a positive expectation. Society and community involvement indicated positive peer involvement but they have experienced isolation from the society.

Conclusions: When raising a Down syndrome child, every mother experienced the situation as more demanding and complex. Specially in the provision of care. Majority of mothers perceived satisfaction with life and relatively mild level of stress. Mothers having a child with Down syndrome influenced by society and community positively and negatively. Sometimes these children are isolated from social groups. In addition, some community groups support them.

Keywords: *Down syndrome, Experiences, Mothers, Phenomenology, Qualitative study*

OP 06

Antibiotic Resistance Patterns and Drug Resistance Index of Bacterial Pathogens Isolated from Bloodstream Infections at Teaching Hospital Karapitiya

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Background: Emergence of multidrug-resistant bacteria and increasing rates of antibiotic resistance necessitate more judicious use of antibiotics. Overuse, underuse or misuse of antibiotics may lead to antibiotic resistance. Overuse of antibiotics can be assessed by calculating the multi drug resistance index.

Objectives: To determine the multidrug-resistance (MDR), extended drug resistance (XDR) and pan drug resistance (PDR) patterns among bacterial isolates of blood, and to determine the multidrug resistance index (MDRI) at Teaching Hospital Karapitiya (THK)

Methods: A total of 423 antibiotic sensitivity results of blood culture isolates were extracted at Microbiology Laboratory, THK from January to June 2022. Extracted data was explored for the detection of MDR, XDR, and PDR of frequently isolated organisms. MDR was defined as acquired non-susceptibility to at least one agent in three or more antimicrobial categories, XDR was defined as isolate resistant to at least one agent in all but two or fewer antimicrobial categories and PDR was defined as isolates resistant to all agents in all antimicrobial categories. MDRI was used to determine the usage of antibiotics. A value of MDRI=0.2 was used as the cut-off to denote high-level use of antibiotics.

Results: Of all blood culture isolates, Gram-negatives (81.3%) were higher than Gram-positives (18.7%). *Escherichia coli* (25.1%) and *Staphylococcus aureus* (22.2%) were the predominant Gram-negative and Gram-positive pathogens, respectively. Majority were multidrug-resistant bacteria (57.6%). Considering all MDR Gram-negatives, *Klebsiella* spp. (72.7%) was the predominant isolate followed by *Acinetobacter* spp. (68.2%) and *E. coli* (66.0%). Of all MDR Gram-positives, *S. aureus* was the commonest (47.9%). A total of 68.6% isolates had a MDRI of >0.2.

Conclusion/s: The majority of blood culture isolates were multidrug resistant and showed high MDRI indicating the necessity for immediate and effective measures to reduce misuse of antibiotics, thereby combating antimicrobial resistance.

Keywords: Antibiotic resistance patterns, Extended drug resistance, Multidrug-resistance, multidrug-resistance index, Pan drug resistance

OP 07**Comparison of True Positivity and Contamination of Blood Cultures: A Cross-sectional Study**

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Background: Blood cultures are done for the detection of bacteremia. Identification of the antibiotic sensitivity of major blood borne pathogens is important for selecting an effective antimicrobial drug and provide better patient care management.

Objectives: To compare the proportions of blood culture positivity, causative bacterial pathogens, antibiotic sensitivity pattern and common contaminants of positive blood cultures between the Emergency Treatment Unit (ETU) and general wards (GW) in Teaching Hospital Karapitiya (THK)

Methods: A cross-sectional retrospective study was carried out from January to March 2022. All the consecutive patients admitted to the ETU and GW in THK were included and analysed using SPSS. Chi-squared test was used to test the associations between variables.

Results: A total of 353 blood culture reports from ETU and 1271 from GW were analysed. The proportions of true positivity of blood cultures in ETU and GW were 24.1% (n=85) and 9.4% (n=119), respectively. *E. coli* was the most frequently isolated pathogen in ETU (36.5%) and GW (21.3%). *E. coli* and *Klebsiella* spp. were sensitive for amikacin (94.6%, 100%), imipenem (91.7%, 93.3%), gentamicin (77.7%-85%). *Acinetobacter* spp. showed higher resistant rates. Susceptibility of *Pseudomonas* spp. was 83.3% to gentamicin. Among *Staphylococcus aureus*, proportion of MSSA and MRSA were 10.3% (n=21) and 10.3% (n=21), respectively. Group B streptococci and *Streptococcus pneumoniae* were susceptible to penicillin (100%). The proportion of contamination was significantly higher in ETU (12.5%) compared to GW (7.25%) ($p<0.001$). The commonest contaminant was Coagulase negative *Staphylococcus* spp. Commensal organisms were considered as contaminants except central-line associated bloodstream infections and repeated culture positivity with same organism with same antibiotic sensitivity pattern.

Conclusions: The blood cultures from ETU showed higher values for both true positivity and blood culture contamination compared to GW. Gram-negative bacteria were the commonest isolated pathogen. These findings will assist healthcare professionals to take measures to reduce blood culture contamination and to utilize the resources effectively.

Keywords: Antibiotic sensitivity pattern, Blood borne pathogens, Blood culture contamination, Blood culture positivity, Common contaminants of positive blood cultures

OP 08

Depression, Anxiety, and Stress among Caregivers Caring Patients with Psychiatric Disorders at the National Institute of Mental Health during COVID-19 Pandemic

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Background: Psychological distress among caregivers is a global concern. Maintaining psychological well-being of caregivers caring patients with psychiatric disorders is important since patients are not having good insight into managing disease. The study field is not well explored related to the local setting with relates to COVID-19 pandemic.

Objectives: To assess the prevalence and associated socio-demographic factors of depression, anxiety, and stress existing among caregivers who are caring patients with psychiatric disorders at the National Institute of Mental Health (NIMH), during the COVID-19 pandemic

Methods: A descriptive cross-sectional study was conducted among randomly selected 385 caregivers attending the NIMH in Sri Lanka. Data were collected using a validated interviewer-administered questionnaire consisting of Depression, Stress, and Anxiety scale- 21 items (DASS-21). Data were analysed using descriptive and inferential statistics (Chi-squared test) with SPSS version 25.0.

Results: The mean (\pm SD) age of the participants was 39.76(\pm 10.22) years old. The majority were male (62.9%), Sinhalese (92.5%), married (60.5%), and employed (88.1%). Among the respondents, 48% reported normal-level depression (mild–36.4%, moderate–15.1%, severe–0.3%). Anxiety was highly prevalent in considerable proportion (normal–34.8%, mild–22.6%, moderate–36.1%, severe–5.7%, extremely severe–0.8%). Stress was prevalent in the sample as normal–94%, mild–5.2%, moderate–0.8% levels. Depression existed as normal–48.3%, mild–36.4%, moderate–15.1% and severe–0.3%. Anxiety, stress and depression were statistically significant with marital status ($p < 0.001$) and anxiety and stress were significantly associated with the level of education ($p = 0.016$).

Conclusion: Depression, anxiety and stress were reported at different levels among caregivers of the patients with psychiatric disorders at NIMH during COVID-19 pandemic. Psychological distress was associated with the marital status and the level of education. Measures should be taken to improve the psychological burden with increasing the awareness.

Keywords: Anxiety, Caregivers, Nurses, Psychiatric disorders, Psychological distress

OP 09

In -vitro Anti-inflammatory Activity, Release of Polyphenols and Accelerated Stability of *Aegle marmelos* L. Fruit Extracts Encapsulated Alginate Nanoparticles

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Background: Nanoencapsulation of *Aegle marmelos* L. (Family: Rutaceae) fruit extracts, is a timely approach to enhance its anti-inflammatory activity, controlled release of polyphenols, and preserve stability. The synthesized *A. marmelos* fruit extracts encapsulated alginate nanoparticles (ANs) were characterized by several characterization techniques previously by our research group.

Objectives: To evaluate *in-vitro* anti-inflammatory activity of aqueous, ethanol, 50% ethanol, and 50% acetone extracts of *A. marmelos* encapsulated ANs and their controlled release of polyphenols and accelerated stability

Methods: ANs were prepared using the ionic gelation method. Anti-inflammatory activity was evaluated by xanthine oxidase (XO) inhibitory activity, heat-induced and hypotonicity-induced hemolysis. Allopurinol and diclofenac were used as the reference compounds, respectively. The *in-vitro* release of polyphenols was studied at both pH 1.2 and pH 6.8. Accelerated stability was assessed using thin layer chromatography fingerprints and based on total polyphenol content over a month period at 27 °C and 4 °C. Data of anti-inflammatory assays were analysed using one-way ANOVA, followed by Tukey's post-hoc test.

Results: Of the four nanoformulations, 50% acetone extract of *A. marmelos* encapsulated ANs was most effective in inhibiting XO enzyme (68.8%) compared to its free extract. However, 50% ethanol extract of *A. marmelos* encapsulated ANs showed the highest significant ($p < 0.05$) increase in the inhibitory activity of 93.3% for heat-induced hemolysis, and aqueous extract of *A. marmelos* encapsulated ANs exhibited 95.8% for hypotonicity-induced hemolysis. The cumulative release of polyphenols from the alginate matrix was controlled by encapsulation, accounting for approximately 16-69% (aqueous), 25-69% (ethanol), 20-58% (50% ethanol), 43-100% (50% acetone) in both pH 1.2 and 6.8 within 48 h. The results of the accelerated stability revealed that phytoconstituents were preserved upon encapsulation over the period of one month at 27 °C and 4 °C.

Conclusions: Results proved that nanoencapsulation of aqueous, ethanol, 50% ethanol, and 50% acetone extracts of *A. marmelos* enhanced its anti-inflammatory activity, prolonged controlled release, and preserved the stability of phytoconstituents. Therefore, they could be promising anti-inflammatory agents with a controlled release profile.

Keywords: *Aegle marmelos* L., Alginate nanoparticles, Anti-inflammatory activity

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OP 10

Depression and Anxiety and Its Associated Factors among People with Non-Communicable Diseases Attending Divisional Hospital Thalangama, Sri Lanka

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Background: Globally, the prevalence of non-communicable diseases (NCDs) is growing relentlessly posing an immense threat to public healthcare service delivery by acting as a leading cause of global morbidity and mortality. The prevalence is rapidly rising in low-and middle-income countries. Depression and anxiety are highly prevalent among people with chronic diseases and may negatively impact disease management and health-related quality of life.

Objectives: To assess the level of depression and anxiety and its associated factors among people with NCDs attending Divisional Hospital Thalangama, Sri Lanka

Methods: A descriptive cross-sectional study was undertaken involving 400 patients with NCDs attending NCDs Clinics at Divisional Hospital Thalangama. Previously validated Patient Health Questionnaire (PHQ-9) and General Anxiety Disorder (GAD-7) questionnaire were used to assess depression and anxiety respectively and those questionnaires were validated to the Sri Lankan population. Data were analysed using SPSS version 25.0.

Results: Mean(\pm SD) age was 63 \pm 10 years and the majority were female (56%), Sinhalese (97.25%), married (94%), and educated up to primary education (73.5%). Commonly prevalent NCDs included diabetes (69.3%), hypertension (84.3%), and hyperlipidemia (79.3%). The majority reported a minimal level of depression (71.5%) and anxiety (79.8%). Mild levels of depression and anxiety were reported by 21.3% and 17.8% respectively. Both depression and anxiety level were associated with demographic characteristics such as age, education level, religion, marital status, income level, use of alcohol, and exercise ($p<0.05$). Also, both depression and anxiety were associated with diabetes, hypertension, and hyperlipidemia ($p<0.05$).

Conclusions: The majority of patients with NCDs shows minimal level of anxiety and depression. Periodical studies are recommended to assess the level of anxiety and depression and their associated factors among patients with NCDs. Strategies need to be improved to enhance mental well-being of the patients with NCDs.

Keywords: Anxiety, General Anxiety Disorder (GAD-7), Non-Communicable Diseases (NCDs), Patient Health Questionnaire (PHQ-9), Psychological distress

OP 11

Psychological Disturbances due to COVID-19 Pandemic and Coping Strategies Adopted by Undergraduates of Selected Faculties of University of Ruhuna

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Background: University undergraduates are a vulnerable group for psychological problems. The COVID-19 pandemic, quarantine, and new normalcy had a significant impact on the psychological health of the undergraduates as reported in the literature. Hence, different coping strategies were adopted by undergraduates and have been practiced globally.

Objective: To assess psychological disturbances (stress, anxiety, and depressive symptoms) and coping strategies encountered due to the COVID-19 pandemic, by undergraduates of selected five faculties at the University of Ruhuna

Methods: A descriptive cross-sectional study was conducted conveniently among 359 undergraduates of the randomly selected five faculties: Allied Health Sciences, Engineering, Humanities and Social Sciences, Management and Finance, and Medicine using a web-based questionnaires (Google Forms) from June-August 2022. In the questionnaire, stress, anxiety, and depressive symptoms were assessed using the validated 21-item Depression, Anxiety, and Stress scale (DASS-21) and coping strategies were evaluated by the validated Brief COPE scale.

Results: The majority were females (62.1%). The sample's mean(\pm SD) age was 23.67 (\pm 1.6) years. Undergraduates were found to have a high prevalence of stress (53.7%), anxiety (41.8%), and depressive symptoms (63.8%), respectively. It revealed a significant positive correlation between anxiety and depressive symptoms ($r=0.64$, $p<0.001$), anxiety and stress ($r=0.86$, $p<0.001$), and stress and anxiety ($r=0.78$, $p<0.001$). Undergraduates reported high levels of adaptive coping at a rate of 33.2%, compared to undergraduates who coped with maladaptive coping (9.1%). Active coping, acceptance, and religion were the most popular adaptive coping strategies. Self-distraction techniques were used as maladaptive coping strategies.

Conclusions: During the COVID-19 pandemic, most undergraduates reported high levels of stress, anxiety, and depressive symptoms, and relationships between these variables were positive. Undergraduates employed more adaptive coping strategies than maladaptive coping strategies. Mental health development programs, stress management programs, and counseling are very important events to initiate in universities to cope with unexpected situations.

Keywords: *Anxiety, Coping, COVID-19 pandemic, Depressive symptoms, Stress, Undergraduates*

OP 12

The Predictive Role of Inflammatory Markers and Generating Cut-off Values in Determining the Mortality of COVID-19 Patients Admitted to Intensive Care Units of University Hospital, KDU

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Background: Covid-19 disease caused by SARS-CoV-2 had a rapid global spread leading to a pandemic with high mortality. Therefore, it is imperative to predict the mortality of the patients beforehand and generate cut-off values that support the prediction.

Objectives: To study the predictive role of inflammatory markers and to generate optimal cutoff values of Covid-19 patients admitted to Intensive Care Units (ICUs)

Method: A retrospective cohort study was conducted with 219 Covid-confirmed patients admitted to ICUs of the University Hospital KDU from June to December 2021. Patients without a confirmatory diagnosis for Covid-19 infection (by PCR or RAT), with missing records and patients with malignancy were excluded. Bed headnotes were traced from medical records to extract the peak values of inflammatory markers [C-Reactive Protein (CRP), Lactate Dehydrogenase (LDH), procalcitonin, serum ferritin, neutrophil-lymphocyte ratio (N/L ratio)] and patient outcomes (deceased or discharged). Correlation between inflammatory markers and patient outcomes was assessed using Point Biserial Correlation. Optimal cut-off values of the significantly correlated inflammatory markers were predicted by Receiver Operating Characteristics (ROC) curve and Area Under the ROC curve (AUC). $p < 0.05$ was considered as statistically significant.

Results: Among 219 patients, 119 patients were deceased, and 100 patients were discharged. CRP ($r=0.432$), LDH ($r=0.194$), procalcitonin ($r=0.177$) and N/L ratio ($r=0.371$) showed statistically significant positive correlations with poor patient outcomes while serum ferritin depicted a negative correlation. The ROC analysis showed that AUC for CRP was 0.762 (sensitivity=0.731 and specificity=0.75), which is higher than the AUCs of N/L ratio (0.755), LDH (0.697) and procalcitonin (0.685). The significant optimal cut-off values of CRP, LDH, procalcitonin, and N/L ratio predicting mortality were 158.43 mg/L, 749.50 U/L, 0.345 ng/mL and 14.465, respectively.

Conclusions: Study suggests that CRP, LDH, procalcitonin and N/L ratio along with their cut-off values possess a potential predictive role in determining the mortality of Covid-19 patients. Less number of laboratory investigations for serum ferritin, missing values of laboratory parameters and conducting a retrospective study are the limitations of the study.

Keywords: Covid-19, Cutoff values, Inflammatory markers, Patient outcomes

OP 13

Relationship between Depression, Anxiety, Stress and Coping Strategies among Nurses Working in General Wards of Selected Hospitals in Southern Province, Sri Lanka

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Background: Nursing is a stressful profession due to its inherent complex demands, high expectations, and greater responsibilities. Owing to these characteristics, nurses working in clinical settings are prone to experience high degree of depression, anxiety, and stress leading to poor job performance and diminished quality of life. Nevertheless, in view of providing effective patient care, nurses need to cope with numerous adverse emotional states.

Objective: To assess the relationship between depression, anxiety, stress and coping strategies among nurses working in general wards of four selected hospitals in Southern Province, Sri Lanka.

Methods: A descriptive cross-sectional study was conducted in four selected hospitals in the Southern Province with 300 conveniently recruited nurses. Participants completed validated Depression, Anxiety and Stress Scale-21 (DAS-21) and Coping Inventory for Stressful Situations-21 (CISS-21) along with socio-demographic questionnaire. Data were analysed by descriptive statistics and Pearson's correlation tests.

Results: The mean(\pm SD) age of participants was 34.55 ± 3.80 years with the majority were female ($n=277$, 92.3%) and married ($n=161$, 53.7%). The mean(\pm SD) work experience was 8.22 ± 3.79 years (range: 1-16). The mean(\pm SD) depression, anxiety and stress scores were 11.11 ± 6.04 (range: 8-25), 10.32 ± 6.38 (range: 9-34) and 12.69 ± 6.65 (range: 8-25), respectively. The mean (\pm SD) scores of task-oriented coping, emotional-oriented coping and avoidance-oriented coping were 14.54 ± 2.51 (range: 0-28), 16.17 ± 3.09 , (range: 0-30) and 14.27 ± 2.47 (range: 0-34), respectively. Task-oriented coping was negatively correlated with anxiety ($r=-0.18$, $p=0.011$) whereas emotional-oriented coping was negatively correlated with anxiety ($r=-0.19$, $p=0.008$) and depression ($r=-0.16$, $p=0.024$). No adverse emotional state correlated with avoidance-oriented coping.

Conclusions: Nurses experience mild levels of depression, anxiety, and stress due to multiple work tasks and use task-oriented and emotional-oriented coping as effective strategies to tackle emotional disturbances encountered in the clinical setting. Hence, providing a conducive work environment assists nurses to counteract negative emotional states using effective coping strategies which in turn promote quality nursing care.

Keywords: Anxiety, Coping strategies, Depression, Nursing, Stress

OP 14

Evaluation of Microbial Contamination of Selected Pasteurized Milk Products Available for Sale at Food Outlets in Karapitiya, Galle, Sri Lanka

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Background: Milk plays a significant role in the diet, and it is an excellent medium for the growth of food-borne pathogens. As the ready-to-drink, pasteurized milk products are expected to be of good quality, regular assessment of these products is necessary to prevent food-borne illnesses.

Objective: To assess the prevalence of microbial contamination of selected pasteurized milk products available for sale at food outlets in Karapitiya, Galle, Sri Lanka

Methods: A total of 31 pasteurized milk samples of different brands which were 1-2 days prior to their expiry date, were purchased from supermarkets and food outlets in Karapitiya and stored at 2-8°C until laboratory procedures were performed (samples were stored until samples reach to 1-2 days prior to their expiry date). The total plate count and total coliform count of pasteurized milk were obtained by spread plate technique in nutrient agar and MacConkey agar, respectively. The number of counted bacteria was expressed in colony-forming units per mL using the formula. The presence of milk-borne pathogens was determined by using standard biochemical tests, catalase, coagulase and KIA etc.

Results: Total plate count and total coliform count of pasteurized milk were compared with the standard plate count limits (20 000 SPC/mL) and total coliform count limits (10 CFU/mL). In this study, out of 31 milk samples, 10 (32.3%) exceeded the standard plate count limit and 15 samples (48.4%) exceeded the coliform count limit. Overall, 20 samples (64.5%) showed bacterial contamination. *Staphylococcus aureus*, *Candida* species and other gram-negative organisms were isolated in equal proportions (1/31, 3.2%). None of the samples grew *Salmonella* spp. Coagulase-negative *Staphylococcus* species were isolated in 67.7% (21/31).

Conclusions: In this study, the majority of milk samples were beyond the limits of acceptable bacterial counts making them unsatisfactory for consumption.

Keywords: *Coliform count, Foodborne pathogens, Microbial contamination, Pasteurized milk, Plate count*

OP 15

Prevalence of Screen Addiction and its Psychological Impact to the Secondary-level School Children in Galle Educational Division

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Background: Prevalence of screen addiction among secondary school children is a significant problem which affects various psychological issues. Identifying the extent and associated psychological problems is crucial in order to develop effective policies and take actions.

Objectives: To study the prevalence of screen addiction and its psychological impact on secondary-level school children in Galle educational division

Methods: A descriptive cross-sectional study was conducted among 419 school children in the age of 12-16 years from selected schools within Galle educational division, using stratified multistage cluster sampling method. A pre-tested, self-administered questionnaire was used to assess prevalence, screen addictive behavior, and psychological problems. Screen addiction was defined as using screens for more than 2 hours. Depression, anxiety, and stress levels were evaluated using Depression Anxiety Stress Scale - Youth 21. Data analysis performed using SPSS version 25.0, and the association between screen addiction and psychological problems were determined using Chi-squared test.

Results: In the sample, majority were Sinhalese (81.1%), while 18.9% were Muslims. Among them, 56.6% were male. The prevalence of screen addiction was 39.6%. The study found that computers (3.6%), laptops/tablets (4.8%), smartphones (20.6%) and television (25.5%) as the frequently used screen devices. In screen addictive behavior, majority (45.1%) agreed with the statement "Even if I don't get any message, I check the screen of my mobile device" while 10.2% agreed with "I often use screen devices soon after wake up (while staying in the bed)". Additionally, 27.7% had an urge to use any of the screen devices. Findings of the study reveals that among screen addicted participants, 23.4% were severely depressed, 18% were severely anxious, and 19.8% were severely stressed. Study demonstrated a significant association ($p < 0.005$) between screen addiction and depression, anxiety, stress among secondary school children.

Conclusion: Screen addiction is prevalent among secondary-level school children in Galle district, leading to psychological health problems. Awareness, intervention, and balanced screen usage are crucial for promoting well-being and further research is needed to confirm findings and enhance preventive measures for screen addiction.

Keywords: Psychological impact, Screen addiction, Secondary-level school children, Sri Lanka

OP 16

Epidemiological and Clinical Profile of COVID-19 Patients Admitted to Intensive Care Unit of the National Institute of Infectious Diseases, Sri LankaPerera J.A.N.D.^{1,2}, Wimalasiri-Yapa B.M.C.R.^{1#}¹*Department of Medical Laboratory Sciences, Faculty of Health Sciences, The Open University of Sri Lanka, Sri Lanka*²*National Hospital, Colombo, Sri Lanka*[#]*Corresponding author: bmwim@ou.ac.lk*

Background: COVID-19, caused by SARS-CoV-2, is an ongoing global pandemic. There were three waves of the disease caused by different virus variants. Knowledge on epidemiological and clinical features associated with the severe disease due to different variants warrants future pandemic preparedness.

Objective: To evaluate epidemiological and clinical characteristics of patients admitted to the intensive care unit (ICU) of the main treatment center designated to treat COVID-19 patients in Sri Lanka

Methods: A descriptive retrospective study was conducted in National Institute of Infectious Diseases, Colombo using records of hospitalized RT-PCR confirmed cases of COVID-19 from January 2020 to August 2022 related to three waves of the epidemic. Data were analysed by descriptive statistics, Chi-squared and ANOVA tests.

Results: Of the sample (n=272), 23, 132 and 117 patients were admitted to ICU in the first, second and third waves, respectively. In the second and third waves, there was an increase in the mean age (\pm SD) (58.1 ± 17.4 and 58.5 ± 17.1 years) compared to the first wave (50.2 ± 14.4 years). The majority of patients admitted were men, 69.6%, 68.2%, 66.7% from first to third wave, respectively. On average, patients were admitted to the hospital by 2.9, 4.3 and 5.8 days of symptom onset during first to third waves, respectively. Across three waves, 34.8% (n=8), 38.6% (n=51) and 72.6% (n=85) were deceased. The most common symptom reported was cough in the first wave (56.5%) while fever was the most common symptom in the other two waves (56.8% and 66.7%). From first to third waves, the number of people with comorbidities was 47.8%, 79.5% and 75.2%. The mean duration of symptom onset to time of admission was significantly higher in the third wave compared to first ($p < 0.001$) and second ($p < 0.05$) waves. Of the three waves, greater number of deaths was significantly associated with third wave ($\chi^2 = 32.13$; $p < 0.001$).

Conclusions: There was a trend towards older and less healthy (with co-morbidities) men to be affected over time. During latter two waves, patients presented to the hospital lately. Second and third waves shared similar clinical profile while doubling subsequent mortality.

Keywords: COVID-19, Epidemiology, ICU

OP 17

Hematological and Biochemical Parameters in Chronic Hemodialysis Patients Attending the Teaching Hospital, Karapitiya

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Background: Chronic kidney disease (CKD) is an overriding health problem. End stage renal disease (ESRD) is characterized by irreversible and progressive destruction of renal function. ESRD patients, undergoing chronic dialysis are at risk of developing anaemia due to toxic uremic environment. The acid base status and removal of uremic substances by hemodialysis may impact the properties of blood cells.

Objectives: To analyze the hematological and biochemical parameters in chronic hemodialysis patients attending Dialysis Unit, Teaching Hospital, Karapitiya

Methods: This cross-sectional study included 77 ESRD patients on regular hemodialysis. Socio-demographics, drug history and dialysis duration were obtained. Retained pre dialysis blood samples, haematology and biochemical test reports were collected. Fifty-nine Leishman-stained blood smears were examined. Morphological changes were scored using ICSH recommendations. Statistical analysis was done using SPSS version 25.0.

Results: Sample included 50 males and 27 females. Among them 48.1% had 24 hours/month dialysis duration. All the patients were anaemic. There was no significant correlation between hemoglobin concentration and the duration of hemodialysis ($p=0.137$). From the total, 54.24% of blood smears had echinocytosis, 5.08% had target cells, 28.8% and 10.2% had high amount of cell shrinkage and cell fragmentation, respectively. There was a significant correlation between cell shrinkage and the hemodialysis duration ($p=0.007$), cell fragmentation and the hemodialysis duration ($p=0.022$). Of the sample, 22.08% had low serum Na^+ levels. There was no significant correlation between serum Na^+ level and hemodialysis duration ($p=0.438$). Out of sample, 27.27% of patients had high serum K^+ levels. There was a significant correlation between serum K^+ levels and the hemodialysis duration ($p=0.029$).

Conclusions: Comparable to previous studies the patients in this study showed abnormalities in haematological parameters. The majority of the patients were moderately anaemic and showed normochromic – normocytic blood smears. Majority had normal levels of serum Na^+ and K^+ . Regular assessment of haematological, biochemical parameters and red cell morphology is crucial in the management of ESRD.

Keywords: Anaemia, Chronic Kidney Disease, Hemodialysis, Hemodialysis duration

Comparison of Drug Loading Capacities of Mg Al Layered Double Hydroxides Synthesized via Soft Template Method Using Different Aging Conditions

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Background: Template directed synthesis of Layered double hydroxides (LDH) has gained much attention as the removal of the template results in a porous LDH material with large surface area which leads to high drug loading.

Objectives: To synthesize Mg-Al LDHs via template-directed synthesis using different aging conditions followed by calcination, to load prepared LDH samples with diclofenac sodium and to compare drug loading capacities of these composites

Methods: Templated Mg Al LDHs (TLDH1, TLDH2) were synthesized using sodium dodecyl sulphate (SDS) and poly vinyl pyrrolidone (PVP). TLDH1 was aged at 60°C in an oven for 20 h and TLDH2 was aged at 135 °C for 4 h hydrothermally in an autoclave. Samples were calcined at 500°C for 5 h to remove the template and the LDH structure was regenerated using an ethanolic solution of diclofenac sodium (TLDH1-R-D, TLDH2-R-D). Corresponding pristine LDL samples were synthesized following the same procedure without the template (LDH1, LDH2). Prepared LDHs were characterized using x-ray diffraction (XRD), fourier transform infrared spectroscopy (FTIR), scanning electron microscopy (SEM), and thermogravimetric analysis (TGA) techniques. Drug loading capacities of prepared LDHs were analysed.

Results: The XRD spectra of prepared LDHs exhibited characteristic diffraction peaks corresponding to (003), (006), (009), (015), (018), (110), and (113) planes revealing a successful synthesis of pure LDH layers. Changing the reaction conditions resulted in the Mg-Al LDHs with different degrees of crystallinity and crystal size. Samples prepared via PVP-SDS template method showed high drug loading, compared to corresponding pristine LDH samples. Moreover, the drug loading capacity of TLDH2-R-D, showed higher drug loading capacity (51.3%) compared to TLDH1-R-D (41.9%).

Conclusions: Mg-Al LDH nanocarriers having high drug loading capacity could be successfully synthesized using PVP-SDS template. Drug loading capacity could be increased by aging the samples hydrothermally (135°C).

Keywords: Drug loading, Layered double hydroxides, Poly Vinyl Pyrrolidone, Sodium Dodecyl Sulphate, Template

OP 19

Prevalence, Knowledge, and Preventive Practice of Work-related Musculoskeletal Disorders among Nursing Undergraduates of University of Ruhuna

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Background: Work-related Musculoskeletal disorders (WMSD) are common among nurses. Nursing undergraduates are not competent enough in safe-patient handling while maintaining the correct body techniques. Studies in this area are effective to reduce the occurrence of WMSD among future nursing cadre enabling them to continue optimum patient care.

Objectives: To evaluate the prevalence, knowledge, and preventive practice on WMSD among nursing undergraduates of University of Ruhuna (UoR)

Methods: A descriptive cross-sectional study was conducted among the all-registered nursing undergraduates of 3rd and 4th year (n=95) in Nursing Degree Programme, Faculty of Allied Health Sciences, UoR during July to August 2022 using a pre-tested, self-administered questionnaire. The questionnaire consisted of few sections including Nordic Musculoskeletal Questionnaire (to screen for musculoskeletal pain in last 12 months), 07 questions to evaluate the knowledge (high; 6-7, moderate; 3-5, low; 0-2), 08 questions to assess the preventive practices (optimum; 17-24, moderate; 9-16, low; 0-8). The data were analyzed with SPSS version 25.0 with descriptive statistics and Chi-squared test.

Results: The majority (96.8%, n=92) of undergraduates were suffering from WMSDs during last 12 months. Of the sample, 67(70.5%) nursing undergraduates reported ankles/feet pain after the working hours of clinical placements. A least had complained (n=5, 5.3%) of having pain in elbows. Age, gender, academic year, nationality and body mass index had no association with the prevalence of WMSDs among nursing students ($p>0.05$). The majority of students (n=62, 65.3%) had high level of knowledge regarding the WMSDs while a least (n=5, 5.3%) had low level of knowledge. Of the participants, 51.6% had low, 41.1% had moderate levels of preventive practices while only a few had optimum level (7.4%) of practices. Prevalence of WMSDs had no significant associations with either level of knowledge ($p=0.43$) or levels of practices ($p=0.63$).

Conclusions: A high prevalence of WMSDs was reported among the study group. Even though students had high level of knowledge regarding the WMSDs, they do not practice proper techniques to reduce the WMSDs.

Keywords: *Knowledge, Nursing students, Prevalence, Preventive practices, Work related musculoskeletal disorders*

OP 20

Comparison of Body Composition and Inflammatory Markers in End Stage Renal Disease Patients with Atherosclerosis and Patients with Coronary Artery Disease

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Background: Cardiovascular diseases are the primary cause of mortality and morbidity among patients on dialysis for end stage renal disease (ESRD). Persistent inflammation is common among the clinical conditions where obesity paradox is applied. It is important to know how body composition and inflammatory markers differ between patients with coronary artery disease (CAD) and ESRD, since it can help to understand the distinct pathogenesis in them.

Objectives: To compare the body composition and systemic inflammation in patients with ESRD with atherosclerosis and patients with CAD

Methods: Patients with ESRD on haemodialysis awaiting kidney transplant at Teaching Hospitals, Karapitiya (THK) and Kandy and patients with CAD, awaiting coronary artery bypass graft (CABG) at the Cardio-thoracic Unit of THK were studied. An arterial tissue biopsy (from renal and external iliac artery of ESRD patients and from aorta of CAD patients) was collected for histological assessment. Inflammatory markers, interleukin-6 and high sensitivity C-reactive protein (Hs-CRP) were estimated and dual energy x-ray absorptiometry scan was performed to assess the body composition.

Results: Out of 43 ESRD patients and 50 CAD patients recruited, atherosclerosis was present in the arterial/aortic biopsies of 25 patients with ESRD and 49 patients with CAD. Mean (SD) age of the ESRD patients with atherosclerosis (46(11) yrs) was significantly lower compared to CAD (54 (6) yrs) patients. Mean (SD) BMI of the ESRD patients (22.0 (3.7) kg/m²) was significantly lower ($p<0.001$) compared to CAD patients (25.4 (3.6) kg/m²), total body bone mineral content (TBBMC) of ESRD patients (1802.9 (332.0)g) was significantly lower ($p<0.001$) compared to CAD patients (2129.5 (298.4)g), total body lean mass (TBLM) of ESRD patients (36186.6 (10126.2)g) was significantly lower ($p<0.001$) compared to CAD patients (44662.4 (6911.5)g), total body bone mineral density (TBBMD) of ESRD patients (1.03 (0.1) g/cm²) was significantly lower ($p=0.003$) compared to CAD patients (1.12 (0.08) g/cm²) and significantly higher Hs-CRP ($p=0.005$) level was observed in ESRD patients (2 (3.3) mg/L) compared to patients with CAD (1 (3.6)mg/L).

Conclusions: Patients with ESRD were had lower BMI, TBBMC, TBBMD and TBLM and higher Hs-CRP compared to patients with CAD. Low TBBMD, TBBMC and TBLM are likely manifestations of severe vascular disease among ESRD patients.

Keywords: Body composition, Coronary artery disease, End stage renal disease

OP 21**Perceived Body Appearance and Eating Habits among Undergraduates of the Faculty of Allied Health Sciences, University of Ruhuna: A Cross-sectional Study**

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Background: Perception of body appearance is a crucial factor in young adults' lives because it is associated with a decreased quality of life in youth. Overweight/ obese young adults are likely to underestimate their weight. Eating habits have a vital relationship with the perception of body appearance. In Sri Lanka, only a few studies have examined the perception of body appearance among university students.

Objectives: To examine the perceived body appearance and eating habits among undergraduates in the Faculty of Allied Health Sciences (FAHS), University of Ruhuna (UoR)

Methods: A descriptive cross-sectional study was conducted involving 300 selected undergraduates who are studying in the FAHS, UoR. A pre-tested self-developed questionnaire was used to collect data about perception of body appearance and eating habits. Body Mass Index (BMI) was calculated to assess nutritional status. Data were analysed using SPSS version 25.0.

Results: The majority of participants were in the 23-24-year age group. The majority of participants were satisfied with their body appearance and only 6% severely concerned about appearance. Of the participants, 136(45.3%) were dissatisfied with their shape, they wanted to be thinner or heavier. The majority of the undergraduates 163(54.3%) had unhealthy eating patterns. Nearly half of the undergraduates (n=154, 51.4%) used to eat snacks more than three times per week. Apart from meals, 66 (22%) participants only consumed vegetables and fruits daily. Gender ($p=0.028$), BMI ($p<0.05$), and eating habits ($p=0.024$) were significantly associated with perception of body appearance.

Conclusions: The majority of participants were concerned about their body appearance and most of them were dissatisfied with their body appearance. Most of the students had unhealthy eating habits. Female gender was the most important associated factor with the perception of body appearance. Appropriate educational programs on body appearance and nutrition ought to be implemented for undergraduates.

Keywords: *Body appearance, Eating habits, Undergraduates, Body weight*

OP 22

Perception of Post-partum Mothers Regarding the Post-partum Care Services Provided by the Public Health Midwives during the First Six Weeks

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Background: The postpartum period is crucial for a mother's and newborn's long-term health, making postpartum care (PPC) a critical and continuous process. Public health midwives (PHM) play a pivotal role in delivering PPC services during the first six weeks, ensuring high-quality care for maternal and child well-being. Assessing the perception of mothers regarding PPC services by PHM is essential for evaluating effectiveness and identifying areas for improvement.

Objective: To assess the perception of post-partum mothers regarding the postpartum care services provided by the PHM during the first six weeks

Methods: A descriptive cross-sectional study was conducted with 116 post-partum mothers in the Imaduwa MOH area, Galle using a pre-tested, self-administered questionnaire. Data were analyzed using SPSS version 25.0 with descriptive and Chi-squared statistics.

Results: The majority of mothers had a very good perception of PHMs' performance in newborn care (99.1%), breastfeeding support (92.2%), and family planning and contraception education (85.3%), respectively. Of 65.5% mothers had a good perception of general post-partum care assessment by PHM. However, under general postpartum care assessment, mothers perceived that there was a failure of 33.6% of PHMs to wear gloves during examinations which raises serious concerns about hygiene and infection control, and 40.5% of PHMs did not assess the nutritional status of the mothers. Also, mothers had a poor perception that the frequency of PHM home visits after delivery was 44% and only 12.1% of mothers received all recommended four visits after delivery when comparing with the standard guidelines in maternal and childcare packages.

Conclusions: Mothers had very good perceptions of PHMs provided services on newborn care, breastfeeding support, family planning, and contraception education. Also, mothers had a good perception of general PPC assessment. However, there was a failure of PHMs to wear gloves during examinations and PHMs did not assess the nutritional status of the mothers appropriately. Special attention is essential to improve the frequency of home visits after delivery according to the standard guidelines in maternal and childcare packages.

Keywords: *Assessing, Perception, Post-partum care services, Post-partum mothers, Public Health Midwife*

OP 23

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

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Background: Episiotomy is a common surgical procedure to widen the vaginal opening during childbirth in Sri Lanka. For post-natal mothers, the postpartum period is critical, and careful attention, understanding of episiotomy care, and general well-being are essential for a better recovery and to prevent further post-partum complications.

Objective: To assess the knowledge and associated factors regarding episiotomy care among postnatal mothers in Teaching Hospital Mahamodara (THM)

Methods: A descriptive cross-sectional study was conducted among post-natal mothers with episiotomy who are in post-natal wards in THM. Using non-probability convenience sampling method, 206 mothers were recruited and an interviewer-administered, pre-tested questionnaire was used to collect data. The descriptive statistics and Chi-squared test were applied to analyse the data using the SPSS version 25.0.

Results: The majority of mothers (n=123, 59.7%) were between 26-35 years age group. A considerable proportion of mothers responded as educated up to GCE O/L (n=83, 40.3%). The majority of mothers (n=143, 69.3%) had poor knowledge regarding episiotomy care. The larger proportion of mothers (n=159, 77.2%) had poor knowledge regarding the major symptoms of an infected episiotomy. Among them, 78.6% (n=162) were not aware of the suggested period to avoid sexual activity after episiotomy incision. The knowledge regarding episiotomy care was significantly associated with maternal age ($\chi^2=8.667$, $p=0.034$) and educational status of the mother ($\chi^2=9.519$, $p=0.049$).

Conclusions: There are significant gaps in lack of knowledge regarding episiotomy care among post-natal mothers in THM. Therefore, planning maternal awareness sessions during the antenatal period will help to increase the maternal knowledge of episiotomy care to enhance the quality of life of the mothers.

Keywords: *Episiotomy, Knowledge, Post-natal mothers*

OP 24

Evaluation of Anti-inflammatory Activity of an Emulgel Based on Ayurveda Formulation 'Ratha Taila'

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Background: 'Ratha Taila' is an effective traditional herbal preparation, mainly used topically for skin diseases of children. The ingredients of 'Ratha Taila' include *Ixora coccinea*, *Croton aromaticus*, *Gossypium herbaceum*, *Cocos nucifera*, and oil of *Sesamum indicum*.

Objectives: To formulate a topical dosage form (emulgel) as a modified ayurvedic formulation of 'Ratha Taila' and evaluate its *in-vitro* anti-inflammatory activity

Methods: Aqueous extracts of *I. coccinea*, *C. aromaticus*, *G. herbaceum* and *C. nucifera* were prepared using the traditional decoction method. Oil of *S. indicum* was obtained from a local manufacturer. 'Ratha Taila' was prepared according to the method mentioned in the Ayurvedic Pharmacopoeia of Sri Lanka. The anti-inflammatory activity of 'Ratha Taila' and its ingredients were evaluated using an egg albumin denaturation assay. Diclofenac sodium was used as the reference drug. An emulgel was prepared using plant extracts, carbopol 940 and Tween 20. Anti-inflammatory activity of the prepared emulgel was compared against the commercially available diclofenac sodium gel. Stability tests (visual observation, centrifuge test, freeze-thaw test, spreadability test, and pH test) were conducted for 45 days. One-way ANOVA test was performed using SPSS version 25.0.

Results: 'Ratha Taila' and its ingredients demonstrated significant anti-inflammatory effects *in-vitro* ($p < 0.05$), except *C. nucifera*. Diclofenac sodium demonstrated an inhibitory concentration 50 (IC₅₀) value of 538.3 µ/mL, while 'Ratha Taila' exhibited a IC₅₀ value of 571.6 µ/mL. Individual ingredients, *I. coccinea*, *G. herbaceum*, *C. aromaticus*, and sesame oil, had IC₅₀ values of 682.7, 727.4, 648.2, and 910.2 µ/mL, respectively. Accordingly, 'Ratha Taila' has demonstrated a higher potency for anti-inflammatory activity *in-vitro* than the individual ingredients. Commercially available diclofenac sodium gel and the prepared emulgel have exhibited IC₅₀ values of 422.6 µ/mL, and 511.6 µ/mL.

Conclusions: Similar to the Ayurvedic formulation of 'Ratha Taila', formulated emulgel with same ingredients has a potency for anti-inflammatory activity.

Keywords: Anti-inflammatory, *Croton Aromaticus*, Egg albumin denaturation assay, *Ixora coccinea*, *Ratha Taila*

OP 25

Evaluation of Antimicrobial Activity of Modified Cream Based on Ayurvedic Formulation ‘Anoda Kola Alepaya’

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Background: ‘Anoda Kola Alepaya’ is a traditional Ayurvedic formulation which is composed of leaves of *Abutilon indicum* (country mallow), rhizomes of *Curcuma longa* (turmeric), seeds of *Oryza sativa* (rice) and *Cocos nucifera* (coconut).

Objectives: To evaluate antimicrobial activity of a modified cream based on ‘Alepaya’ against *Pseudomonas aeruginosa*, *Staphylococcus aureus* and *Candida albicans*

Methods: The ‘Alepaya’ and aqueous extracts (AE) of *A. indicum*, *C. longa*, *O. sativa* and *C. nucifera* were prepared. Antimicrobial activity and respective IC₅₀ values of the ‘Alepaya’ and AE of its components was evaluated by agar disc diffusion method against *P. aeruginosa* (ATCC 27853), *S. aureus* (ATCC 25923) and *C. albicans* (ATCC 10231). A modified cream was prepared using AE of the ingredients of the ‘Alepaya’, white soft paraffin, Tween 20, emulsifying wax and distilled water by phase inversion technique. Antimicrobial activity of the cream was evaluated using agar well diffusion method. Gentamicin (0.4mg/disc) and fluconazole (0.4mg/disc) were used as the positive controls in both tests. Distilled water and 10% DMSO were used as negative controls for agar disc diffusion and well diffusion methods, respectively. Physical observations of formulated cream were made for a period of three months at 8°C, 25°C and 40°C weekly. Formulated cream was evaluated for physical appearance, pH, spreadability, centrifuge testing and freeze thaw test. Statistical analysis was performed using SPSS version 26.0.

Results: ‘Alepaya’ and its ingredients demonstrated significant antimicrobial effects ($p < 0.001$) except *O. sativa* and *C. nucifera* compared to the respective negative control. The IC₅₀ values obtained for ‘Alepaya’, *A. indicum*, *C. longa* and formulated cream were 228.20 µg/mL, 332.50 µg/mL, 304.00 µg/mL and 268.00 µg/mL, respectively against *P. aeruginosa*; 149.90 µg/mL, 316.00 µg/mL, 344.00 µg/mL and 235.50 µg/mL, respectively against *S. aureus* and 350.30 µg/mL, 407.00 µg/mL, 450.00 µg/mL and 400.10 µg/mL, respectively against *C. albicans*. Formulated cream was stable throughout three months. The pH at 29°C was 6.17 and the spreadability was 31.34±0.88. Phase separation was not seen.

Conclusions: Formulated cream exhibited antimicrobial activity against the tested organisms. The cream was stable throughout three months.

Keywords: *Abutilon indicum*; *Curcuma longa*; *Oryza sativa*; *Cocos nucifera*; Antimicrobial

OP 26

Exposure Status and Risky Activities of Leptospirosis Patients Admitted to the Secondary and Tertiary Level Government Hospitals in Southern Province Sri Lanka

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Background: Leptospirosis is a deadly disease transmitted through water. This can be transmitted to the man directly through a skin lesion, a cut, mucous membranes or through a wound. A noticeable increment of deaths has been reported during the past years especially in Southern province, Sri Lanka according to the previous statistics.

Objectives: To identify the exposure status and risk activities of leptospirosis patients admitted to the secondary and tertiary level government hospitals in Southern province

Methods: A descriptive cross-sectional, multi-centered study was carried out in secondary and tertiary level government hospitals in Southern province (11 hospitals), Sri Lanka. Convenient sampling method was used to recruit study participants. Inward patients managed and diagnosed as leptospirosis, currently resident in Hambantota, Matara, Galle districts, and above 14 years of age were included. An interviewer-administered questionnaire was administered to collect data. Descriptive statistics and Chi-squared test were used to analyse data.

Results: In total 211 patients diagnosed with leptospirosis were reported. Mean age (\pm SD) of the sample was 43.7(\pm 15.66) and majority was male predominantly. Most of the participants did not engage in any formal employment (unemployed) 41(19.4%). A considerable number of participants were engaged in paddy farming (n=37, 17.5 %) and manual labourer work (n=22, 10.4%). The most possible exposure was "walking on wet soil/mud/marshy land" without footwear (58.3%) and also, a significant number of patients (n=44, 20.9%) was exposed to flood. The highest risky activity identified among the sample was part time paddy farming (n=75, 35.5%) as a place where leptospirosis transmission occurs. Also engaged in part time cinnamon cultivation was a significant risk activity (n=31, 14.7%). According to the results, there is no statistically proven association ($p>0.05$) between clinical presentation and possible exposures .

Conclusions: Engaged in part time paddy farming and expose to flood were identified as high-risk activities and walking on wet/ soil/ marshy lands without protective boots is the riskiest exposure. Proper awareness targeting risk exposure groups is recommended to prevent the disease specially in high-risk areas.

Keywords: Exposure status, Leptospirosis, Risky activities, Sri Lanka

OP 27

Associations between Healthcare Utilization and Quality of Life of Older Adults with Non-communicable Diseases in Rural Sri Lanka

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Background: The prevalence of non-communicable diseases (NCD) is high in older adults. Such chronic conditions together with poor healthcare utilization would lead to poor quality of life (QoL) in older adults. In the Sri Lankan context, the associations between these factors are not known.

Objective: To determine the association between utilization of healthcare services and QoL of older adults (aged 60+ years) with NCDs, living in rural Sri Lanka

Methods: A cross-sectional study was conducted recruiting 324 participants. The World Health Organization Quality of Life-BREF (WHOQOL-BREF) questionnaire was used to measure QoL of older adults with four domains; physical health, psychological health, social relationships, and environmental health. A self-administered questionnaire was developed and used to collect required socio-demographic information. Data were analysed using SPSS version 25.0.

Results: A total of 324 older adults with NCDs were participated in this study. The age range was 61-97 years (mean \pm SD; 70.53 \pm 7.42). Among them, 138 (42.6%) were men. In the study sample, the prevalences of hypertension, diabetes, asthma, and arthritis were 60.8%, 42.3%, 16.7%, and 12.3%, respectively. About 81.0% of older adults with NCDs visit allopathic clinics at least once a month and about 8.0% of older adults with NCDs visit Ayurvedic doctors at their clinics at least once a month. The mean (\pm SD) score (out of 100) of QoL for Physical, psychological, social, and environmental domains of the participants were 56.53 (\pm 9.93), 55.78 (\pm 10), 63.76 (\pm 16.57), and 61.32, (\pm 10.92), respectively. The QoL of older adults were not vary by the frequency of their doctor visits, except for social dimension of QoL. The social QoL was higher among those who attend regular doctor visits.

Conclusion: A high proportion of older adults with NCDs seems to utilize allopathic healthcare services on a regular basis. Although the QoL was satisfactory in most of the older adults with NCDs, attention should be paid to improving their physical and psychological QoL.

Keywords: *Health care utilization, Non-communicable diseases, Older adults, Quality of life, Rural Sri Lanka*

OP 28

Succession Planning in Healthcare: A Study of Hail Health Cluster, Saudi ArabiaAlenazi K.N.¹, Itumalla R.^{2#}, Acharyulu G.V.R.K.³¹*Department of Health Management, College of Public Health Informatics, University of Hail, Saudi Arabia*²*School of Management, The Apollo University, Andhra Pradesh, India*³*School of Management Studies, University of Hyderabad, Hyderabad, Telangana, India*

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Background: Healthcare organizations must ensure that succession planning is in place to ensure that people are prepared to take on leadership roles as soon as a vacancy occurs in the organization. In Saudi Arabia's healthcare system, one of the main issues that needs to be addressed is the absence of succession planning for healthcare leadership.

Objective: To explore healthcare leaders' perspectives on succession planning in Hail Health Cluster, examine how succession planning practices are effective, and determine the level of satisfaction of healthcare leaders gained with succession planning

Methods: A descriptive study was conducted using a translated Arabic version of research tool (Garman AN, Tyler JL, 2004) in which succession plans was assessed. A total of 30 responses were collected from healthcare leaders.

Results: The results found that the only 25% of the respondents reported that a specific successor been identified for their position. The most frequently cited barrier for not identifying the successor was that it was not a high enough priority (33.34%). In most cases (85.71%), successors were not formally prepared before taking over. More than fifty percent (53.57%) of respondents indicated the transition will take place in 6 months to 1 year and 21.43% reported that the process will take 1 to 2 years. Organization is effective in identifying appropriate successors ($p=0.873$) and organization is effective in preparing candidates for the role ($p=0.118$) were not significant. Length of the transition process has an effect on succession planning practices ($p<0.001$) and developmental activities employed has an effect on effectiveness in preparing successors ($p<0.001$). Majority of the respondents were not satisfied (89.29%) with succession planning.

Conclusions: Based on the study, it was concluded that the Hail Health Cluster was not effective in identifying the successor. Hence, Hail Health Cluster needs to prioritize succession planning and make sure that the right successor is identified in advance to avoid any adverse consequences. In addition, the study recommends the Hail Health Cluster develop a succession planning manual containing rules and regulations for healthcare leaders.

Keywords: *Hail health cluster, Healthcare leaders, Succession planning*

OP 29

**Exploring Patients Experience in Availing Phygital Healthcare Services:
Development of a Conceptual Framework**

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Background: The advancement in technologies is having the profound impact on business and healthcare is no exception. This is evident from the recent pandemic where hospitals adopted digital technologies to provide online services to the patient where physical visits could be avoided. However, physical interaction between doctors and patients are required for not just better treatment but also for patients' satisfaction. The healthcare needed to think of a business model where they can offer physical health care services as well as use digital technologies for remote monitoring/online consultation/ other services. A new model combining physical and digital channel, termed as phygital healthcare is a practice of integrating digital to physical means, to better serve patients.

Objective: To develop a conceptual framework examining the experience of the patients in availing phygital healthcare services

Methods: Semi-structured interviews were conducted with 23 doctors and practitioners and 20 patients to collect primary data to examine the perception of patients on phygital healthcare. Thematic analysis of qualitative data was conducted.

Results: Based on the thematic analysis, seven themes were identified. These themes were further categorized into four benefits namely Convenience, Personalization, Service engagement and Satisfaction, and three challenges namely Lack of standardization, Technological barrier and Security.

Conclusions: This business model will enhance the efficiency of healthcare with lesser human resources (healthcare providers) more patients can be served. The findings of the study provide guidance for healthcare professionals and healthcare organizations to develop growth-oriented plans that make use of the Phygital channel's potential. It is expected that this new digital model would provide cost-effective way to improve patient satisfaction in online health services in India.

Keywords: *Challenges, Patient experience, Phygital, Healthcare*

OP 30

Adherence to Pre-analytical Fasting Guidelines in a Nationally Representative Sample in the United States

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Background: The definition of fasting, the manner in which it is communicated to clients, and the methods employed for its evaluation exhibit variations across health professionals. Similarly, the perceived significance of adhering to fasting and the factors linked with it demonstrate diversity among lay people. Notably, while extensive research has been conducted on compliance with pre-operative fasting guidelines, there exists a notable gap in the literature concerning adherence to fasting protocols specifically designed for preparatory measures preceding laboratory examinations.

Objectives: To identify factors associated with adherence to pre-analytical fasting guidelines in non-institutionalized civilian population.

Methods: In National Health and Nutrition Examination Survey, participants aged 12 and older who were assigned to a morning session for laboratory examination were asked to fast for 9 hours. Fasting status of participants in morning sessions in 3 waves (2013-2014, 2015-2016 and 2017-2018) of the survey were pooled and analyzed against demographics and behaviors, using t-tests and Chi-square test at a significance level of 0.05.

Results: Of 9,200 participants (mean age=45; female=51.6%; White=35.6%), 92.8% adhered to 9-hour fasting guidelines. In bivariate analyses, adherence was significantly greater among females ($d=1.3\%$; $\chi^2=5.32$; $p=0.02$); Hispanics ($d=2.4\%$; $\chi^2=14.96$; $p<0.01$); non-US born people ($d=1.7\%$; $\chi^2=7.52$; $p<0.01$); people with family income \geq USD 20,000 ($d=2.7\%$; $\chi^2=16.43$; $p<0.01$); those who graduated high-school ($d=1.6\%$; $\chi^2=4.61$; $p=0.03$); people who never used marijuana ($d=2.1\%$; $\chi^2=10.06$; $p<0.01$); those who smoked <100 cigarettes in life ($d=1.9\%$; $\chi^2=10.63$; $p<0.01$). Age, perceived health status, dietary intake, physical activity, average sleep, and alcohol usage were not associated with fasting adherence.

Conclusions: Gender, race, county of birth, family income, educational qualifications, marijuana usage, and smoke habits were identified as factors to improve adherence to pre-analytical fasting guidelines. These associated factors also provide more insights into factors that can be leveraged to design effective intermittent fasting interventions.

Keywords: *Adherence, Laboratory examinations, Pre-analytical fasting guidelines*

OP 31**Multiple and Substitute Addictions among Patients Admitted to U.S. Federal Substance Use Treatment Programs: A Market Basket Analysis of U.S. National Data**

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Background: Self-motivated or intervention-based withdrawal of an addictive substance often causes a conscious or unconscious search for a substitute, leading to substitute addiction. In contrast, a new substance may lead to multiple addictions (i.e., polydrug use, concurrent addiction) due to overlap between their neurochemical and behavioral factors.

Objectives: To identify multiple and substitute addictions among patients admitted to substance abuse treatment programs in state agencies. The study also tested the suitability of the data mining method Market Basket Analysis (MBA) to detect common drug use patterns in large-scale datasets

Methods: Admissions data from 2019 and 2020 for patients who were aged 12 and older in the Treatment Episode Data Set (TEDS) were analyzed. Primary, secondary, and tertiary drug use information as self-reported by patients along with demographic data were analyzed, using "Support%" and "confidence%" statistics of MBA to detect multiple and substitute addictions, respectively.

Results: In 2020, of 1,416,357 patients, 31.2% used alcohol, 20.6% used heroin and 9.8% used marijuana as a primary drug. Seven drugs (>1%) were used predominantly as either primary, secondary, or tertiary. Alcohol users had 28% confidence in also using marijuana. Marijuana users had 43% confidence in also using alcohol. For ages <20 years, support for alcohol >marijuana was 26% with 73% confidence in using marijuana. Marijuana and alcohol users had 18% confidence in using cocaine or methamphetamine Pre-pandemic data had similar patterns.

Conclusion: MBA is useful for detecting common substance use patterns in large-scale datasets. Identifying impacts of demographic characteristics on multiple and substitute addictions is important for developing interventions that prevent these common patterns.

Keywords: *Market basket analysis, Multiple addictions, Substance use, Substitute addictions*

OP 32

Workplace Safety Climate in Handling Systemic Anti-cancer Chemotherapy among Pharmacists at the National Cancer Institute, Sri Lanka

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Background: Pharmaceutical agents used in Anti-Cancer Chemotherapy (SACT) are considered hazardous. Unnecessary exposure to hazardous drugs leads to increased negative health effects among healthcare workers who handle them. Pharmacists are at greater risk of exposure and an appropriate workplace safety minimizes the possible risk.

Objective: To assess the Workplace Safety Climate (WSC) in handling SACT among pharmacists at the National Cancer Institute (NCI), Sri Lanka

Methods: A descriptive cross-sectional study was conducted among all pharmacists (n=35) working at the NCI using the 21-item 5-point Likert scale WSC questionnaire which was adopted with the validated Hazardous Drug Handling Questionnaire (HDHQ). Sums of items ranged from 21-105 and a higher score indicates a better safety climate. Data were analyzed with non-parametric analysis using SPSS version 25.0.

Results: Out of the 35 pharmacists, 33 volunteered. The mean(\pm SD) age and professional experience were 39.88(\pm 6.88) and 12.53(\pm 6.85) years. Thirteen pharmacists prepared drugs at the Chemotherapy Reconstitute Unit (CRU) with 1.98(\pm 4.31) years of mean experience in handling SACT. WSC was statistically significant with the working unit ($p < 0.001$) (Kruskal Wallis test). The mean values of WSC for all pharmacists' units vs. CRU were 75.45(\pm 23.15) and 71.74(\pm 21.73). The minimum agreement (agreed and strongly agreed) was reported by 38% for the readily accessible Chemotherapy gloves at CRU. The majority (77%) in CRU reported better WSC by exceeding the 60 values on the 0-100 scale of WSC. WSC was statistically significant with participation in in-service programs ($p = 0.02$), experience ($p = 0.04$) of handling SACT, and gender ($p = 0.000$). However, WSC was not associated with age ($p = 0.12$), professional experience ($p = 0.49$), working experience at NCI ($p = 0.49$), or reconstituted sample count ($p = 0.44$) (Spearman's correlation test).

Conclusions: Better WSC is reported among pharmacists in handling SACT. WSC was associated with participation in in-service programs and experience in handling SACT. Periodical surveys are vital to assess the WSC and its associated factors to minimize the possible risk of exposure by implementing suitable interventions.

Keywords: Occupational health safety, Pharmacists, Systemic Anti-cancer Chemotherapy, Workplace safety climate

OP 33

Medication Awareness among Geriatric Patients with Selected Chronic Diseases: A Hospital-Based Cross-Sectional Study

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Background: Geriatric patients are more likely to have chronic diseases that necessitate pharmacotherapy, including multiple medications. Lack of awareness of medications and reduced compliance are not unusual among patients who use multiple medications.

Objectives: To assess medication awareness and association with sociodemographic factors among geriatric patients with selected chronic diseases in Teaching Hospital, Karapitiya

Methods: A descriptive cross-sectional study was conducted among medical clinic attendees who were in the age of 65 years or above, and on treatment for diagnosed chronic diseases for more than six months. A total of 308 patients were selected. An interviewer-administered questionnaire validated by two healthcare experts was utilized to collect data. The patient awareness on the drug names, doses, frequencies, and indications were assessed for each patient and every correct answer was given +1 and incorrect answer or a do not know response was given 0 marks. The total scores obtained by each patient for each category were added and converted in to percentages. A percentage score 50% or less was considered as an inadequate level of awareness.

Results: Evaluation of the overall awareness about the current medication regimen of the geriatric patients found that 89.3% (n=275) of patients were inadequately aware. The majority of older adults (92%) were not adequately aware of indications of drugs. Awareness of medications significantly ($p=0.033$) varied with educational level, marital status and employment status. However, medication awareness was not influenced by gender or social habits in this study sample. The awareness of medication decreased with increasing number of drugs used ($p<0.05$) by the participants.

Conclusions: The majority of geriatric patients do not have adequate awareness of their medication. It varied with educational level, marital status, employment status and number of drugs used. Educating patients and caregivers regarding their medications and increasing social support will be beneficial for geriatric patients to improve medication use.

Keywords: *Awareness on medications, Chronic diseases, Geriatric patients, Sri Lanka*

OP 34

Awareness and Prevalence of Perceived Symptoms of Cervical Cancer Risk Factors among Women Attending Gynecological Clinics at Base Hospital Tangalle

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Background: Cervical cancer is the fourth most common type of cancer among women globally. Incidence is gradually increasing and 90% of the new cases and deaths are reported in low and middle-income countries. Patient awareness of symptoms, early diagnosis, and treatment improves survival. In Sri Lanka, cervical cancer ranks as the second most frequent cancer among women.

Objective: To assess the awareness and prevalence of perceived symptoms of cervical cancer risk factors among women attending gynecological clinics at Base Hospital Tangalle.

Methods: A descriptive cross-sectional study was carried out among randomly selected and volunteered 418 women attending gynecological clinics at Base Hospital Tangalle, Sri Lanka. An interviewer-administered questionnaire consisting of the Cervical Cancer Awareness Measure (Cervical CAM) was used to assess the awareness and perceived symptoms of cervical cancer. Data were analysed using SPSS version 25.0.

Results: The mean(\pm SD) age was 38.9 (\pm 12.2) years old. The majority were Sinhalese (86.1%), married (85.6%), employed (66.3%), educated up to secondary education level (60.5%), and heard about cervical cancer (92.6%). Perceived gynecological symptoms were lower back pain (60.8%), bleeding between periods (34.2%) and vaginal discharge (30.9%), menorrhagia (32.3%), post-menopausal bleeding (10.3%), and pelvic pain (30.6%). Half of the women in the sample knew that vaginal bleeding between periods and vaginal discharge were symptoms of cervical cancer. However, the majority was not aware of other main symptoms of cervical cancer such as lower back pain (83.7%), dyspareunia (67.5%), menorrhagia (76.6%), post-menopausal bleeding (64.6%), pelvic pain (66.7%), post-coital bleeding (90%), and weight loss (87.8%). The majority showed poor overall awareness (62.7%). Awareness was associated with the age, age of menarche, marriage, menopause, educational level, ethnicity, religion, marital status, occupation, having miscarriage/s, use of contraceptive methods (oral contraceptive pills, Intra-uterine copper devices, natural and permanent), having a pre-existing gynecological and medical condition ($p < 0.05$).

Conclusion: Strategies need to be taken to improve awareness of cervical cancer among women. Further studies are recommended to assess the awareness of risk factors, early screening, and their associations.

Keywords: Awareness, Cervical cancer, Risk factors, Symptoms

Supervision among Third-year Nursing Students in Selected Nurses Training Schools in Southern Province, Sri Lanka

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Background: Nursing education is a combination of theoretical learning and clinical experience. Since nursing is a performance-based profession, Clinical Learning Environment (CLE) and clinical supervision play a significant role in developing the clinical competence of student nurses.

Objective: To identify the factors influencing CLE and clinical supervision as perceived by third-year nursing students in selected nursing training schools in Southern Province, Sri Lanka

Methods: A descriptive cross-sectional study was conducted among purposively selected 369 third-year nursing students from nursing schools of Galle, Matara & Hambantota. Data were collected using a pre-tested self-administered questionnaire including Clinical Learning Environment and Clinical Supervision + Nurse Teacher (CLES+T) evaluation scale that included five dimensions. Data were analysed using descriptive statistics with the use of SPSS version 25.0.

Results: Most of the participants were females (87.8%), aged between 23-25 years (81%). The overall mean of the student's perception was 4.04. The mean of the five dimensions of perception were pedagogical atmosphere 4.19, leadership styles of the ward manager 4.09, Nursing care on the ward-4.17, role of the nurse teacher 4.03 and supervisory relationship 4.02. Among eight sub-dimensions of the supervisory relationship, supervisors' positive attitudes towards supervision had received the lowest mean(\pm SD) score (3.36 ± 0.976). Pearson correlation indicated that there is a statistically significant positive relationship between pedagogical atmosphere and student's perception, ($r=0.914$, $p<0.01$), leadership style of the ward manager and students' perception ($r=0.882$, $p<0.01$), role of the Nurse teacher and students' perception ($r=0.806$, $p<0.01$), nursing care on the ward and student's perception ($r=0.839$, $p<0.01$), supervisory relationship and student's perception ($r=0.857$, $p<0.01$).

Conclusions: Supervisory relationship was identified as a key factor influencing CLE as it has given lowest mean score. Supervisors' positive attitudes were affected by the supervisory relationship. An awareness program on student supervision for nursing staff is recommended.

Keywords: CLES+T scale, Clinical Learning Environment, Clinical supervision, Nursing students, Sri Lanka

OP 36

Estimation of Stature and Weight using Selected Dominant Hand and Handprints Measurements among a Selected Young Adult Population in Sri Lanka

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Background: Estimation of stature, weight, and gender are the fundamentals of personal identification in forensic science of crime victims and missing person's identification.

Objective: To formulate sex specific simple and multiple regression formula to estimate stature and weight of an individual using dimensions of dominant hand and handprints among a group of selected young adults Sri Lanka

Methods: The sample comprises 122 males and 234 females in the age range of 19-28 years at the KIU campus. Selected dominant hand dimensions, handprint measurements, and stature were measured. Independent sample t-test and linear regression were performed using the SPSS version 28.0.

Results: Results showed that all the hand dimensions measured were higher in males and the differences were statistically significant ($p < 0.05$). The selected hand and handprint measurements showed significantly positive correlation ($p < 0.05$) with the stature and weight in both sexes. Derived sex-specific equations were employed to calculate the estimated stature and weight of individuals. Stature prediction accuracy for simple linear regression equation standard estimating error (SEE) was ranged from ± 4.33 to 5.92 cm and ± 4.04 to 5.22 cm for males and females. In case of right and left handprint measurements, the range was ± 4.62 to 6.02 cm and ± 4.62 to 5.88 cm for multiple regression the range was ± 4.41 to 5.09 cm for dominant hand and handprints dimensions. Body weight prediction using hand dimensions SEE was ranged ± 7.72 to 12.86 kg and ± 5.69 to 9.57 kg for male and female while for multiple regression was ± 7.42 kg and 5.44 kg. The multiple regression formulas were more reliable in predicting the individual's weight and stature than the simple linear regression models as a lower SSE and higher R and R -square values.

Conclusion: In the studied sample of young adults, dimensions of hand and handprints are reliable standards in estimating stature and weight. The multiple regression formulas were more reliable than the simple linear regression models as a lower SEE and higher R -square values.

Keywords: Bodyweight, Hand and handprint, Prediction, Regression analysis, Stature

Acknowledgment: Student research grant by KIU

OP 37

Prevalence of Musculoskeletal Discomforts among Pregnant Women Attending Antenatal Clinics in Tissamaharama MOH Area

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Background: Pregnancy is a special condition that can cause numerous physiological changes in a woman's body. Hormonal and anatomical changes during pregnancy create various musculoskeletal discomforts. These discomforts can be varied across the trimesters and limit the activities of daily living.

Objective: To identify the prevalence of musculoskeletal discomforts among pregnant women attending antenatal clinics in Tissamaharama MOH area

Methods: A descriptive cross-sectional study was conducted among conveniently selected 293 pregnant women attending antenatal clinics in Tissamaharama MOH area. Pregnant women with major musculoskeletal problems before pregnancy, who have diagnosed with high-risk problems and psychiatric illnesses were excluded from the study. Data were collected using a pre-tested questionnaire. Chi-square test, independent sample t-test and ANOVA were used to analyse the data.

Results: The mean(\pm SD) age of the pregnant women was 28.37(\pm 5.1) years. The majority (95%) were Sinhalese and only 6.80% were employed. There were 54 (19.30%), 117 (41.80%) and 109 (38.90%) pregnant women in their first, second and third trimester, respectively. In the first trimester, the most experienced musculoskeletal discomforts were lower back pain (44.44%), feet pain (25.92%) and pelvic girdle pain (22.22%). In the second trimester, the most reported discomfort was lower back pain (64.10%) followed by leg cramps (41.81%) and feet pain (34.01%). In the third trimester, lower back pain (73.39%), leg cramps (56.88%), pelvic girdle pain (44.03%) and feet pain (44.03%) were commonly reported with higher prevalence compared to first and second trimesters. There was a significant association between the level of education, body weight, trimester and the musculoskeletal discomforts ($p < 0.05$).

Conclusions: The most prevalent musculoskeletal discomfort throughout the pregnancy was lower back pain and the most discomforts were reported in the third trimester.

Keywords: *Lower back pain, Musculoskeletal discomforts, Pregnancy*

OP 38

Prevalence of Post-stroke Depression and Associated Factors in Selected Tertiary Care Hospitals in Sri Lanka

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Background: The prevalence of stroke and stroke-related disabilities are increasing in low and middle-income countries. Post-stroke depression (PSD) is one of the common consequences of stroke that is associated with poor quality of life.

Objective: To determine the prevalence of PSD and associated factors among the post-stroke patients attending to neurology clinics of selected tertiary care hospitals in Sri Lanka.

Methods: A descriptive cross-sectional study was conducted with the participation of 322 patients with stroke attending neurology clinics at three tertiary care centers in Colombo and Galle districts in Sri Lanka (National Hospital Sri Lanka, Teaching Hospital Karapitiya, Colombo South Teaching Hospital). Convenient sampling technique was used to collect data. The validated Sinhala version of the Patient Health Questionnaire (PHQ-9) was used to screen depression among patients. A pre-tested interviewer-administered questionnaire was used to assess the associated factors of PSD. Chi-squared test, one way ANOVA and t-test were used to analyse the data.

Results: The mean age(\pm SD) of the participants was 60.8(\pm 11.9) years. Among study participants, 59.6% (n=192) were males and only 40.4% (n=130) were females. The majority (84.5%) of the participants had ischemic strokes (n=272). Nealy one-third of them (69.6%) had hypertension. The prevalence of moderate depression was 37.3% (n=120). Of all, 25.5% (n=82) had moderately severe depression and 8.7% (n=28) had severe depression. Socio-demographic factors such as age, gender, level of education, income, clinical characteristics such as type of stroke, level of cognition, hemiplegia, and having concurrent non-communicable diseases were significantly associated with PSD ($p<0.05$).

Conclusions: Nearly half of the patients with stroke had severe PSD. Identified modifiable factors including the hemiplegia and level of cognition should be further evaluated and treated by healthcare providers to improve the quality of life of patients.

Keywords: *Associated factors, Post-stroke depression, Prevalence*

OP 39

Prevalence of Urine Incontinence and Its' Impact on the Quality of Life of Older Adults in Galle

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Background: Urinary incontinence (UI) is a significant physical health issue among older adults. This condition adversely affects the quality of life (QoL) of older adults.

Objectives: To assess the prevalence of UI and its' impact to the quality of life of older adults (aged 60+ years) in Galle district

Methods: Using a self-administered questionnaire, an analytical cross-sectional study was conducted among 210 older adults (male=49, female=161) selected with stratified random sampling from Bope-Poddala Divisional Secretary Area of Galle, Sri Lanka. Validated Sinhala versions of International Consultation on Incontinence Questionnaire (ICIQ) and the World Health Organization Quality of Life Questionnaire (WHOQoL-BREF questionnaire) were used to identify UI and the QoL of older adults respectively. Data was analyzed using SPSS version 25.0. Independent t-test was used to identify association between UI and QoL.

Results: The mean age (\pm SD) of the participants was 68.31(\pm 6.28) years and the age range was 60 to 86 years. The overall prevalence of UI was 7.1%. At least one lower urinary tract symptom was found in 28.6% (n=210) of older adults. There was no difference of UI between males and females ($p>0.05$). Slightly higher mean values of physical health (62.91 vs. 57.2), psychological health (67.83 vs. 62.73), social relationships (71.58 vs. 63.73) and environmental health (66.64 vs. 64.67) dimensions of the QoL were observed among those with no UI compared to those with UI ($p>0.05$).

Conclusions: A considerable number of older adults were suffering from UI, but it has no significant effect on their QoL. However, nurses and other public health care professionals should educate older adults about this health condition and how to control it.

Keywords: Lower Urinary Tract Symptom, Older Adults, Prevalence, Quality of Life, Urine incontinence

OP 40

Health Related Quality of Life and Associated Factors among Pregnant Women with Gestational Diabetes Mellitus: A Cross-sectional StudyKumuduni R.A.D.¹, Sanjeewani P.G.N.², Kanthi H.B.G.T.¹, Ranawaka K.H.¹, Yapa H.E.^{3#}¹New District General Hospital, Matara, Sri Lanka²District General Hospital, Matara, Sri Lanka³Department of Nursing, The Open University of Sri Lanka, Sri Lanka

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Background: Gestational diabetes mellitus (GDM) is a prevalent metabolic disorder during pregnancy affecting 13.9% of women in Sri Lanka. Owing to potential risks to mother, fetus and child's development, GDM may detrimentally impact on health-related quality of life (HRQoL) of pregnant women.

Objective: To examine HRQoL and associated factors among pregnant women with GDM attending to antenatal clinics in District General Hospital, Matara

Methods: A descriptive cross-sectional study was conducted at the District General Hospital, Matara with conveniently recruited 230 pregnant women with GDM from August – October 2023. Participants completed validated European Quality of Life Five Dimension Three Level (EQ5D3L) instrument along with socio-demographic questionnaire. HRQoL was ascertained using the EQ5D3L index score, range between one (perfect health) and -0.73 with a negative score indicating worse health than death. Data were analysed using descriptive statistics and linear regressions analysis.

Results: More than half of participants were between 18-29 years (n=130, 56.5%) and were living in urban areas (n=141, 61.3%). Nearly, half of participants had monthly income between 50,000-100,000 LKR (n=113, 49.1%) while 10.5% (n=24) had <20,000 LKR. Majority of participants were in the third trimester of the pregnancy (n=138, 60%). Of those having comorbidities (n=88, 38.3%), most had pregnancy induced hypertension (n=32, 36.4%). The mean EQ5D3L index score was 0.47 ± 0.38 (range: -0.72 to 1) indicating lower HRQoL. Most of the participants experienced problems with mobility (n=123, 53.5%), undertaking self-care (n=127, 55.2%), and performing usual activities (n=140, 60.9%). Over 64% and 81% of participants experienced moderate level of discomfort and anxiety, respectively. Living in rural areas (B=-0.118, $p=0.031$), low socio-economic status (<20,000 LKR; B=-0.284, $p=0.003$) and pregnancy induced hypertension were significantly and negatively associated with HRQoL (B=-0.468, $p=0.008$).

Conclusions: Pregnant women with GDM experience lower HRQoL. Early assessment of HRQoL and identification of multiple associated factors will assist nurses to proactively design interventions targeted at improving HRQoL of pregnant women.

Keywords: Gestational diabetes mellitus, Health related quality of life

Poster Presentations

Optimization of NaCl Concentration in a General Purpose Medium to Inhibit the Swarming Motility of *Proteus mirabilis*

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Background: *Proteus mirabilis* (*P. mirabilis*) causes infections in humans and is often found in polymicrobial communities in clinical samples and interferes with the isolation of other bacteria due to swarming mortality. Swarming behavior is affected by Sodium chloride (NaCl) concentration. Although commercially available selective media including MacConkey and Cystine-Lactose-Electrolyte-Deficient (CLED) agar inhibit *P. mirabilis* swarming, their NaCl concentration is different [0.034%, 0.056% (w/v) respectively]. Thus, it is important to determine the optimal concentration of NaCl for a general-purpose medium like nutrient agar, which can promote the growth of a broad spectrum of microorganisms while effectively preventing swarming in *P. mirabilis*.

Objective: To optimize NaCl concentration in nutrient agar to inhibit the swarming motility of *P. mirabilis*

Methods: Nutrient agar plates were prepared with a range of NaCl concentrations (5 g/L, 4 g/L, 3 g/L, 2 g/L, 1.5 g/L, 1 g/L, 0.5 g/L, 0.4 g/L, 0.3 g/L, 0.1 g/L). Twenty *P. mirabilis* isolates were separately inoculated in 5 mL nutrient broths and incubated at 37 °C for 16-20h. A 5 µL droplet from each broth was then cultured on to the center of the agar plates, incubated and the diameter of the colony was recorded. Biochemical assays were carried out in the *P. mirabilis* colonies cultured on modified media with the NaCl concentration found to inhibit its swarming motility. As a quality control, ATCC Strains of *K. pneumonia*, *E. coli*, *P. aeruginosa*, *S. aureus*, *E. faecalis* and *P. mirabilis* were cultured on modified media with NaCl concentration found to inhibit its swarming motility.

Results: *P. mirabilis* did not swarm on modified nutrient agar with ≤0.66 g/L NaCl concentration, giving 4 mm diameter isolated colonies. Biochemical assays ensured that no biochemical characteristics had been changed while growth of selected ATCC strains ensured that no effect on growth and metabolic activities by the presence of ≤0.66 g/L of NaCl in the medium.

Conclusions: The modified nutrient agar with ≤0.66 g/L of NaCl concentration inhibits the swarming motility of *P. mirabilis* without interfering with its growth or altering its physiology. Therefore, it would be an alternative medium that supports the growth of a variety of bacteria including *P. mirabilis*, particularly in samples with polymicrobial nature.

Keywords: NaCl, Nutrient agar, *Proteus mirabilis*, Polymicrobial, Swarming

PP 02**Antibiotic Sales in Selected Pharmacies of Galle during Lockdown Period of COVID-19 Pandemic**

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Background: Many measures such as restrictions of public movement and good hygiene practices were implemented by the government due to the COVID-19 outbreak in 2020 and 2021. These lockdown restrictions may limit access to doctors, healthcare institutes and pharmacies. This may contribute to reducing drug use in the community. Further, restrictions on movement and hygiene practices may reduce the spread of infections. As a result of that, the use of antibiotics among the general public might have reduced during this period.

Objectives: To assess the sales of commonly used antibiotics in community pharmacies in the suburb of Galle district, during lockdown periods of COVID-19 outbreak in 2020-2021

Methods: A cross-sectional study was conducted using records of antibiotic sales in three community pharmacies in Galle suburbs, Sri Lanka. Sales records data of four commonly used antibiotics (Co-amoxiclav, Cefuroxime, Ciprofloxacin, and Metronidazole) during the two lockdown periods were obtained from three pharmacies. For comparison, sales record data for two commonly used non-antibiotic drugs (Diclofenac sodium and Losartan potassium), were obtained for the same periods. Unit sales of the antibiotics and control drugs were compared before and during lockdown periods using non-parametric tests at 0.05 significance level.

Results: A clear sale reduction of antibiotics and control drugs was identified during both lockdown periods. However, the sales reduction of antibiotics in the first lockdown (52%) is significantly higher than that of the second lockdown (12%) ($p=0.04$) while the sales reduction of control drugs is not different in the two lockdown periods ($p=0.73$).

Conclusions: There was a reduction in both antibiotic and controlled drug sales during both lockdowns. However, antibiotic sales reduction during the first lockdown is more than that of the second lockdown. The relaxed restrictions during the second lockdown can be one possible reason for this difference.

Keywords: *Antibiotic sales, Community pharmacy, COVID-19, Lockdown periods*

PP 03

Prevalence and Associated Risk Factors of Musculoskeletal Disorders among Garbage Collectors in Colombo Municipal Council, Sri Lanka

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Background: Waste management is a mandatory activity around world but involves a variety of health hazards. In a developing country like Sri Lanka, municipal garbage is collected manually requiring strenuous physical activities and that cause musculoskeletal problem. Musculoskeletal disorders (MSDs) are common cause of morbidity, disability and poor quality of life.

Objectives: To identify the prevalence and associated risk factors of MSDs among garbage collectors in Colombo Municipal Council, Sri Lanka

Methods: This was a descriptive cross-sectional study. Data were collected using an interviewer-administered questionnaire, from 106 municipal garbage collectors who were employed in Colombo Municipal Council as permanent workers for more than 1 year of service.

Results: Majority of the participants of this study were male (90.6%) and mean age (\pm SD) was 46.9 (\pm 9.6) years. The results of the study indicated that 95.6% of the participants reported experiencing musculoskeletal pain in one or more of the defined body regions within the past 12 months. Furthermore, 91.5% of the participants reported experiencing pain within the last 7 days. Higher prevalence of symptoms were observed in the shoulder (78.2%), upper back pain (62.3%), lower back pain (44.3%), knee joint pain (42.5%). A significant proportion of participants (45.3%), exhibited addiction to substances during periods of pain, while a notable proportion (22.6%) of workers resorted to obtaining medication from pharmacies without seeking guidance from a medical practitioner. The results of the study indicate that a majority of the participants, 78.3%, exhibited low level of stress, while a minority of 21.7% demonstrated moderate levels of stress. There was no significant association between MSDs and age, gender, working experience, amount of weight carried at once and stress level. However, there was significant association between musculoskeletal pain with substance uses ($p=0.012$).

Conclusion: The higher percentage of musculoskeletal symptoms among garbage collectors could be affected in shoulders upper back, lower back, knee joint. It is highly recommended to implement preventive measures and treatment strategies to minimize the impact of MSDs among garbage collectors.

Keywords: *Colombo Municipal Council, Garbage collectors, Musculoskeletal disorders, Sri Lanka*

PP 04

Perception on Enrolling into the Nursing Profession Amidst the Covid-19 Pandemic among Nursing Undergraduates; A Qualitative Study

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Background: Despite the fact that the COVID-19 pandemic has exacerbated the prevailing problems faced by nurses such as heavy workload, stress and fatigue, increased threat to life, reduced quality of life of nurses and family members, and reduced job satisfaction. The 2019/2020 intake of nursing undergraduates have enrolled in the nursing profession amidst the COVID-19 pandemic. It is vital to explore the motivating factors which lead them towards selection of the nursing profession while experiencing the pandemic situation in Sri Lanka.

Objective: To identify the perception of newly enrolled nursing undergraduates towards the nursing profession amidst the COVID-19 pandemic situation in Sri Lanka.

Method: A qualitative phenomenological study was conducted in the Department of Nursing, Faculty of Allied Health Sciences, University of Ruhuna from the 8th July 2022 to 24th July 2022 using purposefully selected 11 nursing undergraduates of the 2019/2020 batch. Semi-structured in-depth interviews were conducted with participants until the point of saturation was reached. The semi-structured interview guide consisted of sections on reasons for selecting the nursing profession amidst the pandemic, satisfaction regarding selecting the profession and ambitions for the future. Data was analyzed using the interpretative phenomenological analysis method.

Results: Among the participants; five were male and six were female undergraduates and four have enrolled in the nursing degree programme from the 1st attempt, six from the 2nd attempt and one from the 3rd attempt of GCE A/L examination. The motivating factors are genuine interest in the nursing profession, the influence of family members, high employability and foreign job opportunities. All the participants were truly satisfied with the decision and had the intention to become nurses.

Conclusions: The newly enrolled undergraduates had an expansive view in enrolling on the nursing profession from the beginning despite the COVID-19 pandemic.

Keywords: *COVID-19 pandemic, Motivation to enroll, Nursing Degree Program, Nursing Undergraduates, Perception.*

PP 05

Assessment of Nursing Undergraduates' Perception of the Carousel Method of Teaching

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Background: Nurses are the backbone of the health care system. They should possess certain skills in order to provide better care to the patient and the community. The mere classroom teaching is not enough to train them to gain enough skills in caring the patients. This leads the health care institutes to incorporate different active learning strategies to train undergraduate nurses. Thus, the carousel method is an active learning strategy where students can improve their decision-making, critical thinking, and reflection skills. It allows every student to engage in classroom activity and promotes active participation and team spirit among the students. It helps to learn new information and review existing information while they are working with the group and moving around the classroom. Since it is a kind of collaborative learning, it promotes social interaction and communication skills of the students.

Objective: To assess the students' perception of the Carousel method of teaching at the Faculty of Health-Care Sciences (FHCS), Eastern University, Sri Lanka (EUSL)

Methods: It was a cross-sectional descriptive study. BSc Hons (Nursing) students (n=35) studying in 3rd-year 1st semester were enrolled. Only 22 students responded to the questionnaire. The students' perceptions of the Carousel method of teaching were evaluated after the implementation of the Carousel activity in the classroom. A self-administered questionnaire was used to collect data online using a Google Form. The questionnaire was developed by the investigator and it included six perception statements and one open-ended question. Participants were asked to rate the statements using a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Data were analyzed using SPSS version 21.0. Descriptive statistics were computed to describe the students' perceptions.

Results: This study revealed that most of the participants felt interested in the carousel method. Ninety-one percent of the participants agreed or strongly agreed that they actively participated in the classroom. The majority (81.9%) of the participants stated that they could build a good relationship with their peers, and it helped them to improve their thinking ability (81.8%) & decision-making skills (77.3%). Ninety percent of the participants recommended the carousel method instead of the traditional teaching method. The majority of the students enjoyed the carousel activity as a new experience for them.

Conclusions: Majority of the BSc Hons (Nursing) undergraduates of the sample of EUSL agreed on the carousel teaching method. BSc Hons (Nursing) undergraduates are willing to move towards active learning strategies instead of traditional teaching-learning methods. Further studies are recommended, including the effect of the carousel method on improving the aspects such as reflective skills and teamwork.

Keywords: *Carousal method, Nursing education, Nursing undergraduates, Teaching-learning method*

PP 06

Knowledge, Attitudes, and Establishment of Breastfeeding in Primigravida Women at the Tertiary Care Maternity Hospital in Galle, Sri Lanka

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Background: Breastfeeding (BF) is the single most important low-cost intervention to reduce child morbidity and mortality worldwide. Proper breastfeeding practice is a huge economical investment to a country, especially in low resource setting regions in the world. However, successful establishment of breastfeeding can be challenging for primigravida women due to lack of knowledge, negative attitudes, and insufficient support. It is important to identify those strategic areas which need further strengthening to optimize the outcome of breastfeeding practices in the country.

Objectives: To determine the knowledge, attitudes and establishment of breastfeeding in primigravida women at the tertiary care maternity hospital in Galle, Sri Lanka

Methods: A descriptive study was conducted among 170 primigravida women who gave birth at Teaching Hospital Mahamodara (THM), Galle. Mothers were selected from postnatal wards THM, Galle using convenient consecutive sampling method. The data were collected using validated structured interviewer-administrated baby-friendly initiative questionnaire to obtain establishment of the breastfeeding (UNICEF/UK, 2012) in two stages: within the first 24 hours of birth and on the 7th postnatal day.

Results: The study revealed that most of the participants (n=86, 50.6%) had satisfactory knowledge about breastfeeding. Majority of primigravida women (n=101, 59.4%) had positive attitudes towards breastfeeding of their newborn babies. Vast majority of postnatal women (n=164, 96.5%) had achieved high establishment of breastfeeding rate at 7th day after the delivery. Overall complications (latching problems, breast pain, cracked nipple) related to breastfeeding were 51.7% (n=88). There was a statistically significant association between younger age and non-establishment of breastfeeding ($p<0.001$) compared to advanced age.

Conclusions: Awareness of primigravida women regarding breastfeeding is satisfactorily high. Majority of women have positive attitudes for the breastfeeding. Their establishment of breastfeeding is very high at 7 days after the delivery, even though the complications related to breastfeeding are significantly high. When the woman is younger, establishment of breastfeeding is low.

Keywords – Breastfeeding, Newborns, Postnatal, Primigravida

PP 07

Alcohol Use is Becoming a Socially Acceptable Behaviour among Sri Lankan Undergraduates: Whither Prevention

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Background: Alcohol use has been a male habit in Sri Lanka, and females were less likely to use alcohol because alcohol use by women has been a social taboo in the country. However, current changes in socio-cultural value systems in the country have affected many social and religious customs including social image of alcohol use that could result in increasing the prevalence of alcohol use in undergraduates.

Objectives: To examine the prevalence and the determinants of alcohol use by gender among university undergraduates in selected faculties in University of Ruhuna

Methods: This descriptive cross-sectional study was conducted among undergraduates of the Faculties of Agriculture (FoA), Allied Health Sciences (FAHS) and Engineering (FoE) in the University of Ruhuna (UoR), Sri Lanka. Data related to socio-demographic characteristics, frequency and quantity of alcohol use and personal, environmental and socio-cultural factors associated with alcohol use were collected using Google forms. Yearly alcohol use was defined as use of any form of alcohol at least once in the last 12 months.

Results: A total of 505 undergraduates were surveyed (52.5% were males). The prevalences of yearly alcohol use of male and female undergraduates were 55.5% (95% CI was 49.5%, 61.5%) and 11.3% (95% CI was 7.3%, 15.3%), respectively ($p < 0.05$). Among yearly alcohol users, 46.9% of male and 70.4% of female users ($p < 0.05$) reported that they had their first drink during their university life. Significantly a higher proportion of females compared to males ($p < 0.05$) in FoA (50.0% vs. 39.7%) and FAHS (63.6% vs. 46.4%) reported that they use alcohol for recreational purposes, however in the FoE the opposite was observed (33.3% vs. 54.2%).

Conclusions: Alcohol usage among female undergraduates is becoming a significant public health issue challenging the alcohol control policies in the university system. Prevention activities should focus on how to encounter alcohol use among university undergraduates by examining the availability and accessibility of alcohol products in university premises for university recreational and other social events, and by implementing appropriate control policies.

Keywords: *Alcohol usage, Prevalence, Undergraduates, University of Ruhuna*

Qualitative Phytochemical Comparison between Fresh and Dry Leaf Extracts of *Aegle marmelos*

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Background: *Aegle marmelos*, commonly known as ‘Bael tree’ is a sacred plant that belongs to the family Rutacea. Different parts of the plant such as root, bark, seed, fruit, and leaves are used in traditional medicine for the treatment of various disease conditions.

Objective: To compare the phytochemicals contained in fresh and dry leaf extracts of *Aegle marmelos*

Methods: Fresh and dry leaves (50 g each) of *A. marmelos* were refluxed sequentially using hexane, ethyl acetate, ethanol, and Dichloromethane (DCM):methanol (1:1). The crude extracts were concentrated using a rotary evaporator for the qualitative analysis of alkaloids, phenols, tannins, saponins, terpenoids, cardiac glycosides, steroids, proteins, and carbohydrates.

Results: Alkaloids and phenols were present in both dry and fresh leaves extracts except in the hexane extracts. Tannins were present in both dry and fresh leaf extracts of ethanol and DCM:methanol (1:1), and in the fresh leaf extract of ethyl acetate. Terpenoids were present in both dry and fresh leaf extracts of ethyl acetate, ethanol, and DCM:methanol (1:1) and in the fresh leaf extract of hexane. Cardiac glycosides were present in fresh leaf extracts of hexane, ethyl acetate, and DCM:methanol (1:1) while it was present only in the dry leaf extract of DCM:methanol (1:1). Steroids were present in both dry and fresh leaf extracts of hexane, ethanol, and DCM:methanol (1:1). Carbohydrates were slightly present in fresh leaf extracts. Proteins and saponins were not present in any extract.

Conclusions: *A. marmelos* leaf extracts consist of phytochemicals that are important for many pharmacological activities. The qualitative analysis of *A. marmelos* extracts showed the presence of phytochemicals such as alkaloids, phenols, tannins, terpenoids, cardiac glycosides, and carbohydrates. According to the results, the phytochemical content is higher in fresh leaf extracts than in dry leaf extracts. Moreover, most of the phytochemicals were extracted into high polarity extracts such as ethanol and DCM:methanol (1:1).

Keywords: *Aegle marmelos*, Bael, fresh and dry leaves, Phytochemicals, Qualitative analysis.

PP 09

Prevalence and Risk Factors of Anaemia in Children Aged between 6-24 Months at the Teaching Hospital Karapitiya

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Background: Prevalence of anaemia remains high in children, and it is associated with many factors. Limited studies related to this topic are available in local settings.

Objectives: To assess the prevalence of anaemia in children aged between 6-24 months and to describe the known risk factors

Methods: A descriptive cross-sectional study was conducted at all paediatric units at the Teaching Hospital Karapitiya, using a convenient sampling method among the mothers and children who were admitted. Haemoglobin (Hb) concentration and other red cell parameters were collected from the full blood count (FBC) report. Socio-demographic details, infant's birth weight, gestational age and maternal Hb concentration during pregnancy were collected. Serum iron levels of children were estimated using a colorimetric technique. Anaemia was diagnosed if the Hb concentration <110g/L at sea level. Data were analysed using Chi-squared test and the correlation between parameters were determined.

Results: Among the 78 children, 55 (70.5%) were males. Of the sample 49 (62.8%) children were anaemic. Hb concentration of children was positively correlated with the children's age and mother's first and second trimester Hb concentration. The prevalence of anaemia in children had a significant association with maternal anaemia, children's malnourishment and ethnicity. Male children had significant associations with the development of iron deficiency (ID) and iron deficiency anaemia (IDA). IDA had a significant association with maternal anaemia during pregnancy. Maternal anaemia had a significant association with premature birth (PMB) and low birth weight (LBW). Development of malnutrition had a significant association with maternal education, paternal education and LBW.

Conclusions: The prevalence of anaemia and IDA in children was high with higher rates among males. Prevalence of anaemia was significantly correlated with age and maternal anaemia. Maternal anaemia was significantly associated with LBW, PMB, anaemia and IDA in children.

Keywords: Anaemia, Haemoglobin, Iron deficiency, Maternal anaemia

Knowledge and Practice on Breast Self-examination among Female University Students in Western Province, Sri Lanka

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Background: Breast cancer is the most common cancer among females and a leading cause of death worldwide. Breast self-examination (BSE) is a cost-effective method for self-assessment and for potential early detection of breast cancer in low-resource settings.

Objective: To assess the level of knowledge and practice on breast self-examination among female university students in Western Province, Sri Lanka

Methods: A descriptive cross-sectional study was conducted among conveniently selected female students aged >18 years from two public and two private universities in Western Province. An adopted semi-structured, self-administered questionnaire was distributed online for data collection and was analyzed by SPSS version 26.0. Knowledge and attitude scores were categorized based on pre-defined cut-off values from Bloom's cut-off categories, high (80-100%), moderate (60-79%) and low (<60%) level, respectively. Practice of the participants was assessed according to their inclusion of breast self-examination on routine basis.

Results: A total of 420 students participated from two private and two public universities (105 from each university). Among them, 71.0% had poor knowledge and have never performed BSE before, while 12.1% and 16.9% had moderate and high level of knowledge and have performed BSE infrequently. Of the sample, 52.5% recognized the need for regular check-ups. A majority of 73.6% of students understood that BSE can detect various breast problems. The recommended age to start BSE was chosen as 20 years by 21.2% and 30 years by 49.6% of participants. About 43.2% suggested performing BSE as a lifelong practice, out of which, 35.7% believed it should be done on a monthly basis. Sixty eight percent preferred performing BSE in front of a mirror. Key aspects such as changes in breast size and shape (65.9%), nipple discharge (38.5%), and palpation techniques (62.0%) were recognized by students. The majority (72.4%) performed BSE on both breasts, and 61.8% acknowledged the importance of examining the entire breast area.

Conclusions: The findings suggested that the knowledge on BSE among the participants is not satisfactory and their BSE practices are not up to the standards: therefore, there is a gap in the knowledge and practice of BSE amongst female university students.

Keywords: *Breast self-examination, Female, Knowledge, Practice*

PP 11

Nutritional Challenges among Adolescents in Rural Sri Lanka: Are We Seeing the Tip of an Iceberg?

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Background: Childhood and adolescence are crucial phases in human growth and development, making proper nutrition essential for maintaining good health and overall well-being. However, the recent economic crisis in Sri Lanka has significantly affected family finances, especially among low socio-economic groups, leading to a decline in the nutritional well-being of young individuals.

Objectives: To examine the nutritional health of adolescents residing in selected underprivileged communities in the Central and Uva provinces of Sri Lanka

Methods: A total of 603 secondary-grade students (10-18 years of age) voluntarily participated in this cross-sectional study from rural schools in three education zones (Udunuwara, Walapane, and Welimada) that were selected based on stratified random sampling. Body Mass Index (BMI) of each participant was calculated using weight and height. BMI z-scores were calculated based on age and sex-specific Lambda, Mu, Sigma values according to the guidelines of the World Health Organization. Adhering to the BMI z-score-based body imaging criteria adopted by the Family Health Bureau of the Ministry of Health Sri Lanka, students were identified in five BMI strata: severely thin, thin, healthy-weight, overweight and obese.

Results: Of the sample, 13.3% of boys, and 4.9% of girls were identified with severe thinness, while 19.4% of boys and 12.3% of girls were thin. Accordingly, the prevalence of under-nutrition among boys (32.7%) was significantly high compared to the girls (17.2%) ($p < 0.001$). The incidence of overweight and obesity were 7.6% and 1.1% among boys; and 7.4% and 1.8% among girls, respectively.

Conclusions: According to these results, under-nutrition appears to be a considerable health concern among adolescents in the study areas, requiring in-depth investigations with special focus on young children. As longstanding, under-nutrition may lead multiple health complications in the adulthood, prompt interventions are timely needed to ensure paediatric nutritional health in Sri Lanka, prioritizing socioeconomically disadvantaged rural communities.

Keywords: BMI, Paediatric, School students, Sri Lanka, Under-nutrition

Acknowledgment: Accelerating Higher Education Expansion and Development (AHEAD) Operation of the Ministry of Higher Education funded by the World Bank (AHEAD DOR 02/40), and the Duke Global Health Pilot Grant

PP 12

Characterization of *Solenostemon rotundifolius* and *Dioscorea pentaphylla* Yam Starches as Excipients Compared to Maize Starch BP

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Background: Starch is one of the most extensively used pharmaceutical excipients with minimal processing that could meet most of the requirements for excipients. Starch is the main component in yams and they are cultivated as tuber crops in many areas of Sri Lanka.

Objectives: To characterize the necessary physicochemical parameters of starch extracted from yams of *Solenostemon rotundifolius* (Innala) and *Dioscorea pentaphylla* (Katu Ala) in expounding its appropriateness as excipients compared to maize starch BP

Methods: Yams of *S. rotundifolius* and *D. pentaphylla* were unpeeled, sliced, air-dried, and powdered. Starches were extracted by mixing powdered yams with distilled water (1:2 w/v), filtering, and drying the precipitate at 40°C. The extracted starches and commercially available maize starch BP were characterized considering physicochemical properties such as pH, particle size, bulk, tapped and true densities, Hausner's ratio, Carr's index, angle of repose, hydration capacity, moisture sorption capacity, clarity, turbidity, Infrared spectroscopy analysis, and microscopic analysis. Statistical analysis was performed using SPSS version 23.0.

Results: There was no significant difference between *S. rotundifolius* starch and maize starch BP in terms of bulk density, tapped density, Hausner's ratio, and turbidity while *D. pentaphylla* starch did not report a significant difference in bulk density, clarity and turbidity compared to maize starch BP ($p > 0.05$). Both yam starches exhibited fair flow properties while maize starch BP had poor flow properties. All these three starches exhibited identical IR spectra. Starch granule shapes of *D. pentaphylla*, *S. rotundifolius* and maize starch BP were oval, dome and polyhedral, respectively as per the microscopic analysis.

Conclusions: Both *S. Rotundifolius* and *D. pentaphylla* starches reported certain favourable parameters compared to maize starch BP. Therefore, modifying extracted starches and extraction techniques would enhance their properties.

Keywords: *Dioscorea pentaphylla*, Pharmaceutical excipient, Physicochemical properties, *Solenostemon rotundifolius*, Starch

PP 13

Comparative Study on the Effect of Natural and Artificial Ripening on Nutritional Quality and Cytotoxicity of Mango Fruits (*Mangifera indica* L.)

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Background: Commercial fruit ripening has grown in significance within the fruit industry and agriculture sector of Sri Lanka. Consuming fruits exposed to chemicals is an emerging concern with regard to public health. Liquid ethephon, commonly recognized as Ethrel, stands out as a widely utilized ripening agent in developing countries like Sri Lanka.

Objective: To investigate and compare the effect of natural and artificial fruit ripening on the nutritional quality and cytotoxicity of mangoes (*Mangifera indica* L.)

Methods: Unripen matured mangoes were collected from trees cultivated in a uniform environment and ripened naturally and artificially; administering artificially generated ethylene gas and ethephon aqueous solution (480 ppm). Physicochemical properties (color, texture, weight loss, pulp-to-peel ratio, pH, vitamin C, and titratable acidity), antioxidant activity (1,1-diphenyl-2-picrylhydrazyl (DPPH) free radical scavenging assay, Ferric reducing antioxidant power (FRAP) assay) and cytotoxicity (Brine Shrimp Assay) were analyzed.

Results: The physical appearance of artificially ripened mangoes was comparatively better with a significantly higher weight loss ($p < 0.05$). Naturally ripened mangoes had significantly higher ($p < 0.05$) pulp-to-peel ratio, pH, and vitamin C content, while artificially ripened mangoes had significantly higher ($p < 0.05$) titratable acidity. DPPH scavenging activity results for mangoes naturally ripened, treated with ethylene gas and ethephon solution were 133.95 $\mu\text{gAAE/mL}$, 131.68 $\mu\text{gAAE/mL}$, and 130.56 $\mu\text{gAAE/mL}$ respectively. FRAP results were 197.6 $\mu\text{gAAE/mL}$, 187.46 $\mu\text{gAAE/mL}$, and 184.63 $\mu\text{gAAE/mL}$, for mangoes naturally ripened, treated with ethylene gas, and with ethephon solution respectively. Hence naturally ripened mangoes exhibited a significantly higher antioxidant activity with both assays ($p < 0.05$). Mangoes treated with ethephon solution indicated an LC_{50} value of 925.88 $\mu\text{g/mL}$ displaying low toxicity while mangoes treated with artificially generated ethylene gas indicated non-toxicity with an LC_{50} value of 1441.15 $\mu\text{g/mL}$ according to Clarkson's toxicity criterion.

Conclusions: Both artificial ripening methods have a negative impact on the nutritional quality of the fruits in all parameters tested while displaying potential cytotoxicity in fruits treated with ethephon solution. Thus, consuming artificially ripened fruits could have adverse effects on health.

Keywords: Antioxidant, Cytotoxicity, DPPH, FRAP, Ripening

Acknowledgement: Student research grant by KIU

PP 14

Establishing a Cut-off Value for Myeloperoxidase Levels of Peripheral Blood Neutrophils in Patients with Varying Hemoglobin and Mean Cell Hemoglobin Concentration

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Background: Myeloperoxidase (MPO), a heme-containing peroxidase mostly found in lysosomal azurophilic granules in neutrophils. MPO catalyzes the conversion of chloride and hydrogen peroxide to hypochlorite during inflammation to act on the phagolysosome in microbial death. Since a large number of inflammatory diseases may be associated with anemia leading to varying low levels of plasma hemoglobin (Hb) and, MPO is also an iron containing protein, it is vital to study the behaviour of intracellular MPO in peripheral blood neutrophils.

Objective: To establish cut-off values for MPO in neutrophils using peripheral blood smear with respect to varying Hb and Mean Cell Hemoglobin Concentration (MCHC)

Methods: Total of 180 patients on iron treatment with varying hemoglobin concentrations, attended Hematology Clinic at Colombo North Teaching Hospital, Ragama, Sri Lanka were selected and peripheral blood smears of them were stained with modified quantitative approach of myeloperoxidase stain according to Peiris et al. (2023). The MCHC and Hb were obtained from the Hematology analyzer (Mindray, BC-6800). Data were categorized according to the subgroups of Hb and MCHC; $8.0 < \text{Hb}$ ($n=32$), $8.0 \leq \text{Hb} < 10.0$ ($n=57$), $10.0 \leq \text{Hb} < 12.0$ ($n=54$), $\text{Hb} \geq 12.0$ ($n=37$) and $\text{MCHC} < 32$ ($n=51$), $\text{MCHC} \geq 32$ ($n=129$). The statistical analysis was performed using SPSS version 26.0. Receiver Operating Characteristic (ROC) curve analysis was performed to establish the cut-off value of MPO with MCHC.

Results: Means of MPO and MCHC displayed as almost constant values; about 50 and 32 in a reciprocal manner in all Hb groups. A cut-off value of 47.7 pertaining to MCHC two groups; $\text{MCHC} < 32$ and $\text{MCHC} \geq 32$ was obtained by ROC analysis with AUC-0.637, sensitivity-68.6% and specificity-60.5%.

Conclusion: The results showed the MPO is independent of the Hb concentration. ROC curve results clearly indicate that once the MCHC appears below 32, the MPO is above 47.7. These initial findings should be validated by performing future research with an increased sample size.

Keywords: Hemoglobin, Inflammation, Myeloperoxidase, Neutrophil

Correlations between Peripheral Blood and Bone Marrow Parameters of B-cell Acute Lymphoblastic Leukemia Patients during Post Induction Chemotherapy

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Background: Acute Lymphoblastic Leukemia (ALL) is the most common childhood malignancy, characterized by the uncontrolled proliferation of lymphoid progenitor cells in bone marrow (BM). Examining the BM is the method of choice for monitoring ALL, which can be challenging and time-consuming. Although expensive Minimal Residual Disease (MRD) methods could be used to monitor treatment, they are unfeasible for routine practice. Using PB parameters to screen the bone marrow could provide a cost-effective alternative in the absence of MRD.

Objectives: To assess correlations between peripheral blood (PB) and BM parameters of B-Cell Acute Lymphoblastic Leukemia (B-ALL) patients during post induction chemotherapy

Methods: A total of 75 newly diagnosed B-ALL patients who attended the Haematology clinic at Apeksha Hospital, Maharagama, were selected for the study. Full Blood Count was performed by Haematology analyzer (Mindray BC-6800), and the BM parameters of Blast% (BL%_BM) and Lymphocyte% (L%_BM) were obtained from myelogram reports. The estimations were performed for the 3 phases; Initial diagnosed (D0), Induction phase I- After 8 days chemotherapy (D8) and Induction phase II- After 29 days chemotherapy (D29). Statistical analysis was performed using SPSS version 26.0. The data was separately tested for normalization, followed by Correlation bivariate analysis.

Results: The non-parametric Spearman's correlations showed that the PB parameters have stronger correlations with L%_BM than BL%_BM. The D8 correlations are prominent among all, and it showed L%_PB and N%_PB have significant ($p < 0.01$) positive and negative correlations with L%_BM ($r = 0.365$ & $r = -0.341$). BL%_BM too has a significant ($p < 0.01$) negative correlation ($r = -0.337$) with N%_PB in D0. In D29, only platelets showed a significant ($p < 0.05$) weak correlation ($r = -0.246$) with L%_BM.

Conclusion: There is a significant weak correlation between PB cell counts and BM cell counts during the induction chemotherapy phase of B-ALL. Further studies are required to evaluate applicability of these findings in B-ALL care.

Keywords: B-Cell Acute Lymphoblastic Leukemia, Bone marrow lymphoblast., Bone marrow lymphocyte, Induction Chemotherapy

Formulation and Evaluation of Poly-herbal Topical Cream for Hyperpigmentation

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Background: Hyperpigmentation occurs due to the overproduction of melanin. As free radicals promote melanogenesis, antioxidants are important to combat free radicals and normalize melanin production and inhibition of tyrosinase enzyme leads to inhibition of the biosynthesis of melanin. Considering these facts developing plant-based formulations to treat hyperpigmentation would be beneficial due to least adverse effects.

Objectives: To formulate and evaluate a poly-herbal topical cream for hyperpigmentation by incorporating scientifically evaluated roots extract of *Glycyrrhiza glabra*, leaves and pods extract of *Mimosa pudica* for known antioxidant and tyrosinase inhibitory activities

Methods: Initially, three different cold and vanishing cream bases from each were prepared and observed real-time and centrifugation stability for 14 days at 8°C, 28 ±5°C and 40°C temperatures to observe any instability mechanism. The dose of each plant extract was calculated based on the IC₅₀ and LC₅₀ values obtained for *in-vitro* biological assays and toxicology assays. Calculated doses were incorporated into stable cream bases and kept evaluating real-time and centrifugation stability for 90 days at the same temperatures at specified time intervals. The most physically stable polyherbal cream was evaluated for physicochemical properties by measuring viscosity, spreadability, pH, and homogeneity and observing organoleptic properties and cream type through microscope.

Results: One cold cream base and all vanishing cream bases were stable throughout the 14 days at the mentioned temperatures. Phase separation was the main instability mechanism observed in unstable cold cream bases. The prepared poly-herbal cold cream was subjected to phase separation soon after the centrifugation. However, all poly-herbal vanishing creams were stable throughout the 90 days, and out of them, one vanishing cream was observed with better stability at three temperatures. It was obtained with 54700 cps viscosity, 6.1 gcms⁻¹ spreadability, 6.5 pH. Further, it was an Oil-in-Water type homogeneous vanishing cream with a yellowish-white color and smooth texture along with a pleasant odor.

Conclusion: It is concluded that the most stable poly-herbal vanishing cream will be recommended for further studies including pre-clinical and clinical trials before commercialization.

Keywords: Cream, hyperpigmentation, *Glycyrrhiza glabra*, *Mimosa pudica*

Acknowledgment: This research study was financially supported by CINEC Campus, Malabe, Sri Lanka

PP 17

Establishment of an Association between HDL/LDL Ratio and 10-year Predicted Cardiovascular Risk Using ASCVD Risk Estimator

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Background: Cardiovascular disease (CVD) is a significant global public-health concern, as this is the most common cause of death worldwide. This refers to any disease that affects the heart/blood vessels which is frequently linked with atherosclerosis leading to cardiac events. The 10-year predicted risk for atherosclerotic cardiovascular disease (ASCVD₁₀), which can be obtained through the ASCVD risk estimator, used for the primary prevention of CVDs. The novel parameter, High-Density Lipoprotein/Low-Density Lipoprotein ratio (HDL/LDL_Ratio) is clinically being studied as an important predictor of CVD risk.

Objectives: To establish of an association between HDL/LDL_Ratio and 10-year predicted cardiovascular risk using the ASCVD risk estimator

Methods: A total of 65 volunteers between age 40-70 years without any previous history of CVD or cholesterol lowering drugs were selected. HDL/LDL_Ratio was enumerated through the manual lipid-profile analysis. The ASCVD₁₀ of each individual was calculated using “ASCVD Risk Estimator Plus-Mobile and Web Apps-American College of Cardiology”, admitting the details of the questionnaire. Statistical analysis was performed by SPSS version 26.0. The parameters were checked for their normality and the correlation bivariate analysis. The Receiver Operating Characteristic (ROC) curve analysis were performed, first Total-Cholesterol/High-Density Lipoprotein (TC/HDL_Ratio) categorized in to two groups as TC/HDL_Ratio<4.5, TC/HDL_Ratio≥4.5 and a cut-off value for HDL/LDL was derived (0.32). Based on 0.32, second ROC-curve analysis was performed for the groups of HDL/LDL_Ratio (HDL/LDL_Ratio <0.32 and HDL/LDL_Ratio ≥0.32).

Results: None of the parameters followed the normal distribution. So, the non-parametric Spearman correlation showed that they were significantly and negatively correlated with each other ($r=-0.524$; $p<0.001$). From the second ROC curve analysis, a cut-off value was derived for ASCVD₁₀ as 2.5% based on two groups of HDL/LDL_Ratio, with Area Under Curve 0.693, Sensitivity 76.0% and Specificity 56.0%.

Conclusion: The ROC curve analysis results lead to predict the ASCVD₁₀ from conveniently available HDL/LDL_Ratio and this indicates, once the HDL/LDL_Ratio appears above 0.32, the ASCVD₁₀ present below 2.5%. These initial results can be uplifted by increasing the number of participants.

Keywords: *Atherosclerotic Cardiovascular Disease, HDL-LDL Ratio, 10-year predicted ASCVD risk*

PP 18

Evaluation of *in-vitro* Antimicrobial Activity of Leaf Extract of *Mangifera zeylanica*Senarathne S.M.R.N.¹, Deshan O.P.C.¹, Warnakulasuriya S.N.², Gunawardana S.L.A.^{#1}¹*Department of Pharmacy and Pharmaceutical Sciences, Faculty of Health Sciences,
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Background: The use of herbal plants in the development of antimicrobial dosage forms plays a major role. *Mangifera zeylanica* is an endemic plant which is commonly known as “Etamba” in Sri Lanka. The stem bark of this plant has shown antimicrobial activity in previous research studies.

Objective: To evaluate the antimicrobial activity of *M. zeylanica* leaves against selected microorganisms

Methods: Leaves of the plant *M. zeylanica* were collected from Gampaha District Sri Lanka, and authenticated by the National Herbarium, Sri Lanka. The leaves were sequentially reflux extracted with ethyl acetate and ethanol and investigated the antimicrobial activity against *Staphylococcus aureus* (ATCC 25923), *Escherichia coli* (ATCC 25932), *Candida albicans* (ATCC 10231), *Pseudomonas aeruginosa* (ATCC 27953), and *Staphylococcus epidermidis* (ATCC 12228) using agar well diffusion assay. Ampicillin (0.01 mg/mL), Gentamycin (0.01 mg/mL), Nystatin (0.1 mg/mL), Gentamycin (0.01 mg/mL) and Clindamycin (0.002 mg/mL) were used as the positive controls respectively, while sterile distilled water was used as the negative control. Minimum Inhibitory Concentration (MIC) and Minimum Bacterial Concentration (MBC) were tested against concentrations from 200 mg/mL – 0.0245 mg/mL of ethanolic leaf extract.

Results: The highest antimicrobial activity was shown at 200 mg/mL of both extracts against *S. aureus*, *E. coli*, *C. albicans*, *P. aeruginosa*, and *S. epidermidis*, with the mean(±SD) inhibition zones as follows: by ethanol extract, 24.00(±0.00) mm, 19.80(±0.40) mm, 26.90(±0.40) mm, 24.80 (±1.30) mm, and 22.00 (±0.30) mm, respectively; and by ethyl acetate leaf extract, 23.40 (±0.20) mm, 18.70(±0.30) mm, 25.90(±0.50) mm, 24.40(±0.50) mm, 18.20(±0.30) mm, respectively. Ethanolic leaf extract had MIC and MBC values of 25 mg/mL.

Conclusions: The study concludes that the ethanolic leaf extract of *M. zeylanica* possesses the highest antimicrobial activity in comparison to ethyl acetate leaf extract, and with further investigation, it can be used as a potential therapeutic agent for microbial infections.

Keywords: Agar well diffusion, MBC, MIC, Reflux extraction

Microscopic Characterization and Phytochemical Screening of *Strobilanthes willisii*

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Background: *Strobilanthes* (Acanthaceae) is a genus with 497 species and *Strobilanthes willisii* is one of the 34 *Strobilanthes* spp. found in Sri Lanka. *S. willisii* is an endemic species and distributed only in Ritigala strict nature reserve. Its habitat and distribution have been mapped and reported. The genetic studies are being carried out for the plant. However, the microscopical and phytochemical studies have not been reported.

Objectives: To identify special microscopical characteristics and secondary metabolites present in *S. willisii*.

Methods: Anatomical characteristics of the plant leaf transverse section (TS) (microtome, 8 µm), upper and lower epidermal peels, and TS of the stem were examined under light microscope (x40). Plant stems were dried (incubator, 40 °C), ground, powdered (passing through 450 µm and 180 µm sieve sizes) and subjected to dry powder analysis. Dried plant leaves were ground and extracted to methanol using sonication. Solvent evaporated extract was screened for the presence of phytochemicals (alkaloids, coumarins, flavonoids, glycosides, phenols, quinones, resins, saponins, steroids, tannins, and terpenoids).

Results: Microscopic observations of the leaf TS showed thick prominent upper epidermal and palisade cell layers with equal thickness while spongy parenchyma and lower epidermal cell layers are comparatively thinner. The characteristically enlarged parenchyma tissue could be identified from lower to each vascular bundle. In the stem TS, common dichotomous stem tissues such as; central pith, xylem and phloem (radially lied around one centre not as bundle), cortex, collenchyma, and epidermis could be identified where some of the epidermal cells have filiform trichomes while cytoplasm of some of the cells of endodermis and central pith contain violet colour pigments. Many of the endodermal cells contain green colour pigment and the endodermis is observed as a chlorophyll layer. In powder microscopy, xylem, sclerenchyma and parenchyma cells, tracheid and lignified fibres could be observed. Results of the phytochemical screening revealed the presence of flavonoids, coumarin, and glycosides.

Conclusions: Prominent upper epidermal and palisade cell layers in the leaf TS, violet and green colour pigments in the stem TS and filiform trichomes in the stem and leaf epidermis are special anatomical features of *S. willisii* and can be used for plant identification. Presence of flavonoids, coumarin, and glycosides suggests the potential medicinal properties.

Keywords: Phytochemical screening, Plant anatomy, Powder microscopy, Secondary metabolites, *Strobilanthes willisii*

Sun Protective Activity of *Pyrrosia heterophylla* and *Pyrrosia lanceolata*

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Background: Excessive exposure to ultraviolet (UV) radiation causes harmful effects on the human skin including sunburn, aging and skin cancer. Use of sun protective products helps to minimize these harmful effects. However, most sun products available in the market contain synthetic chemicals, which can cause health issues if used for a long time. This study focuses on finding natural compounds that offer strong protection against the sun.

Objectives: To evaluate the sun protection activity of *Pyrrosia heterophylla* and *Pyrrosia lanceolata*.

Methods: Fresh plant leaves were collected and subjected to extraction using a sequential extraction method employing ethanol, hexane, and ethyl acetate solvents. The preparation of the concentration series involved employing a double dilution method using 99% ethanol as the solvent. Concentration series were then prepared for both plant extracts, ranging from 0.16 to 5 mg/mL. Subsequently, absorbance measurements were taken from each sample using a spectrophotometer in the range of 290 to 320 nm at every 5 nm interval. The sun protection factor (SPF) was calculated using Mansur's equation.

Results: The yield percentage of three extracts of hexane, ethyl acetate and ethanol were 5%, 7%, 67%, respectively. Therefore, ethanol extracts which had the highest yield percentage were selected for the determination of SPF value. Ethanolic extract of *Pyrrosia heterophylla* exhibited the highest SPF value of 41.99 ± 2.00 while *Pyrrosia lanceolata* demonstrated highest SPF value of 40.55 ± 2.00 at the concentrations of 5 mg/mL. In the concentration range of 2.50, 1.25, 0.625, 0.31 and 0.156 mg/mL *Pyrrosia heterophylla* exhibited SPF values of 40.07 ± 2.0 , 38.87 ± 2.00 , 31.23 ± 2.00 , 15.38 ± 2.00 and 7.45 ± 2.00 , respectively while *Pyrrosia lanceolata* exhibited SPF values of 25.58 ± 2.00 , 13.77 ± 2.00 , 6.57 ± 1.00 , 3.38 ± 0.20 , and 1.25 ± 0.20 , respectively.

Conclusions: Both *Pyrrosia heterophylla* and *Pyrrosia lanceolata* extracts exhibited promising sun protection properties, with SPF values exceeding the recommended threshold of 15 at various concentrations. These results indicate the potential application of these plant extracts as natural compounds for sun protection products.

Keywords: Mansur's equation., *Pyrrosia heterophylla*, *Pyrrosia lanceolata*, Sun protection factor

PP 21

Patients' Knowledge of the Management of Diabetic Mellitus: A Cross-sectional Survey among Patients Attending Colombo South Teaching Hospital, Sri Lanka

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Background: Diabetes mellitus (DM) is a global health concern, and the incidence is rapidly increasing; specially in lower and middle-income countries. The causative factors are multifactorial, and patients' awareness of disease management plays a key role in effective disease management.

Objective: To assess the patients' knowledge of the management of DM

Methods: A descriptive cross-sectional study was carried out among randomly selected and volunteered 400 adult patients attending diabetic clinics at Colombo South Teaching Hospital, Sri Lanka from January to June 2023. The data were collected using a pre-tested, validated, semi-structured questionnaire developed by researchers. Knowledge of the management of DM was assessed by a 15-item Diabetic Knowledge Questionnaire (DKQ). Total knowledge was obtained by the sum of items and based on raw values; a 0-100 scale categorical variable was identified. Accordingly, >80, 60-80, and <60 were considered as good, moderate, and poor levels of knowledge, respectively. Data were analysed using SPSS version 25.0 involving descriptive and inferential statistics.

Results: The mean (\pm SD) age was 58.62 ± 10.10 years. The majority were females (239, 59.8%), married (338, 84.5%), and having a first-degree relationship with diabetes (311, 77.8%). The main information source on disease management was the hospital clinic (259, 64.8%). The indication and appropriate level of HbA1c were identified by (82, 20.9%) and (18, 4.5%) respectively. Also, (193, 48.3%) reported that DM is a curable disease. The correct exercise schedule and its importance were identified by (262, 65.5%) and (248, 43.7%), respectively. Diabetic foot ulcers (184, 46%), and diabetic neuropathy (141, 25.3%) were identified as main complications. Also, (286, 71.5%) identified acute management of hypoglycemia. Only 3.3% had good knowledge (20.5% - moderate, poor - 76.3%) of managing DM. The level of knowledge was associated with the age ($p < 0.001$), income ($p < 0.001$), duration of the DM ($p < 0.001$), gender ($p = 0.011$), residence ($p < 0.001$), ethnicity ($p < 0.001$), religion ($p < 0.001$), education level ($p < 0.001$), occupation ($p < 0.001$), marital status ($p = 0.002$), having first-degree relations of DM ($p < 0.001$), and information source on managing DM ($p < 0.001$).

Conclusion: Knowledge of patients on the management of DM was poor. Educational interventions and periodical studies are recommended. Health care workers can play the main role in improving disease management knowledge and mass media and social media also may be effective. Exploring associated factors should be integral to this effort to comprehensively address the challenges surrounding DM management and patient awareness.

Keywords: Colombo South Teaching Hospital, Diabetes mellitus, Management, Patient knowledge

PP 22

Perceived Barriers to the Use of Personal Protective Equipment in Handling Systemic Anti-Cancer Chemotherapy among Nurses at the National Cancer Institute, Sri Lanka

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Background: Systemic anti-cancer therapy (SACT) may adversely affect healthcare workers with chronic low-dose exposure. Nurses who work in cancer treatment units are at a higher risk of exposure. Personal Protective Equipment (PPE) provides key protection.

Objective: To assess the perceived barriers to the use of PPE in handling SACT among nurses

Methods: A descriptive cross-sectional study was conducted among randomly selected 250 nurses working at the National Cancer Institute in Sri Lanka. The barriers to the use of PPE in handling SACT were assessed by the validated Hazardous Drug Handling Questionnaire (HDHQ). Questionnaire on perceived barriers to the use of PPE met satisfactory reliability and validity requirements ($\alpha = 0.83$, KMO = 0.752, $\chi^2 = 2057.65$, and $p < 0.001$). Data were analyzed with descriptive and inferential statistics using SPSS version 25.0.

Results: The mean (\pm SD) age of the participants and working experience at the oncology unit were 35.93 (± 4.29) and 6.98 (± 3.1) years, respectively. The majority were females (81.0%) and educated up to Diploma level (73.6%). According to HDHQ, the majority reported perceived barriers, including not receiving training on the use of PPE (61.2%), being uncomfortable to wear (89.6%), and performing procedures (88.8%) with PPE, always not available (90.4%), unavailability of obtaining chemotherapy-designated PPE (94.8%), unavailability of policy to receive PPE (82.4%), high cost of PPE (84.8%), and feeling too hot with use of PPE (95.2%). However, the majority reported that PPE is necessary (97.2%), PPE is effective (93.6%), and there is sufficient time to use PPE (89.2%). The perceived barriers to the use of PPE were associated with gender ($p = 0.038$), experience in the oncology setting ($p = 0.029$), and patient count in the ward (0.001).

Conclusions: Commonly perceived barriers to the use of PPE in handling SACT were insufficient training, unavailability of chemotherapy-designed PPE, feeling too hot with the use of PPE, physical discomfort and difficulty in conducting nursing procedures, unavailability of policy to receive PPE and the high cost of PPE. Perceived barriers to the use of PPE were associated with gender, working experience, and patient count. The measures need to be taken to minimize the perceived barriers to the use of PPE in handling SACT.

Keywords: Anti-Cancer Chemotherapy (SACT), Barriers, Nurses, Systemic Personal Protective Equipment (PPE)

Nutritional Analysis of Improved Red and White Rice (*Oryza sativa*) Varieties in Sri Lanka

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Background: Rice, as a major cereal crop and staple food, plays a crucial role in meeting the nutritional requirements of populations worldwide. In Sri Lanka, improved red and white rice varieties of *Oryza sativa* are widely consumed in their whole grain form or as processed products. However, despite the importance of rice in the diet, there is a lack of comprehensive studies evaluating the nutritional properties of these improved rice varieties.

Objective: To compare the nutritional properties of the selected improved rice varieties in Sri Lanka

Methods: Rice varieties: Ld408, Ld371, Ld368, Ld376, Ld253, and Ld365, were collected from the rice research station, Labuduwa, Sri Lanka. Total carbohydrate, protein, and amylose content present in the flour of rice varieties were observed using Phenol Sulphuric acid, Lowry, and iodine methods, respectively. The statistical analysis was carried out using GraphPad Prism 9.

Results: It was observed that mean carbohydrate content was in the range of 88.30 ± 0.011 to $79.25 \pm 0.010\%$ on a dry basis. Ld368, a white variety, had the highest carbohydrate content. The mean protein content was in the range of $6.32 \pm 0.064\%$ – $8.46 \pm 0.028\%$ and the red rice variety, Ld408 has the highest protein content. The mean amylose percentage ranged from 20.51 ± 0.32 to $31.96 \pm 0.16\%$. Rice Ld376, red variety has the highest amylose quantity.

Conclusions: Red rice varieties show nutritional advantages over white rice, with higher protein content and potentially serving as a source of essential amino acids. Certain red rice varieties also exhibit higher amylose content, which may have benefits for digestion and glycemic control. This analysis emphasizes the importance of incorporating different rice types for a balanced diet and promoting dietary diversity.

Keywords: Carbohydrate, *Oryza sativa*, Protein, Red rice

Acknowledgment: KIU undergraduate research fund

Assessing Level of Knowledge on First-aid for Common Injuries among Members of Non-academic Staff at University of Sri Jayewardenepura, Sri Lanka

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Background: The knowledge on the application of first-aid is important in delivering effective first-aid and in environments such as universities, with a dense population of young people, having knowledge of first-aid is vital. Since literature on this area is not available in Sri Lankan context, conducting this research is important to identify the level of knowledge in order to take necessary actions.

Objective: To assess the level of knowledge on first-aid for common injuries among members of non-academic staff of University of Sri Jayewardenepura (USJ), Sri Lanka

Methods: A descriptive cross-sectional study was conducted among a conveniently selected non-academic staff members (n=170) of USJ. A validated self-administered questionnaire was used to collect data. Questionnaire consisted with demographic data, knowledge on first-aid including; main components of first-aid and actions to be done for common injuries. Overall knowledge scores were categorized as, "good" and "poor". Data were analyzed using descriptive statistics and inferential statistics using SPSS version 26.0.

Results: The mean (\pm SD) age of the participants was 35.6 (\pm 9.2) years and majority of them were females (55.3%). Of all the participants, 42.4% have completed diploma or degree, 43.5% were management assistants, and only 12.5% have followed a first-aid training. Among all participants, 51.8% had good overall knowledge on first-aid including management assistants and works aid. Technical officers, lab attendants, security officers and drivers had poor knowledge on first aid. Higher education status, training on first-aid and the level of job category of the sample were found to be significantly associated with the knowledge on first-aid ($p < 0.05$).

Conclusions: About half of the participants of the sample had an overall "good" knowledge on first-aid. Knowledge scores were strongly associated with the educational status and job category. Disparities in first-aid knowledge among different job categories affects the effectiveness of first-aid. Job categories having poor knowledge must be targeted when planning educational sessions to improve the knowledge on first-aid for common injuries among non-academic staff of universities.

Keywords: First Aid, Injury, Knowledge, Non-academic staff, Sri Lanka

Satisfaction with Healthcare Services and Associated Factors among Patients with Type 2 Diabetes Mellitus Attending the Endocrinology Clinic, Teaching Hospital Karapitiya

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Background: Patient satisfaction has become one of the leading indicators of healthcare-related behaviors. Therefore, it is important to study patient satisfaction with healthcare services at the clinics to improve the health outcomes of patients with Diabetes Mellitus (DM).

Objective: To determine the satisfaction with healthcare services received by the patients with DM and associated factors attending the Endocrinology Clinic, at Teaching Hospital Karapitiya (THK)

Methods: A descriptive cross-sectional study was conducted on 400 patients with type 2 DM during routine clinic visits at the Endocrinology Clinic, THK. Data were collected using a validated Patient Satisfaction Scale which is a self-administered, 10-item five-point Likert scale. Based on the overall mean score, satisfaction was categorized into three categories; low, mild, and good satisfaction. Data were analyzed using Pearson correlation, one-way ANOVA and t-test using SPSS version 25.0

Results: The mean age of the patients (SD) was 58.52 (\pm 9.25) years and 64% were males. The mean overall score for satisfaction was 3.35 (\pm 0.61). Out of all, 34.3% (n=137) had good satisfaction, while 61% (n=244) and 4.8% (n=19) had mild and low level of satisfaction respectively. Further, 25.8% (n=103) of participants were strongly satisfied with the care received from healthcare providers. However, 37.3% (n=149) were strongly dissatisfied with the waiting time at the clinic and pharmacy to receive medicines. Level of education, having complications, having concurrent diseases, waiting time at the clinic, and adherence to medications were significantly associated with the overall mean satisfaction score ($p < 0.05$).

Conclusions: A considerable proportion of patients were satisfied with the healthcare services of the clinic. However, patients were dissatisfied with some factors such as waiting time and other facilities of the clinic. Therefore, healthcare professionals and policymakers should be aware and take necessary actions to improve patient satisfaction.

Keywords: *Diabetes mellitus, Healthcare services, Patient satisfaction*

PP 26

Estimation and Prediction of Stature Using Footprint Measurements of Undergraduates at KAATSU International University

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Background: An individual's footprint provides useful evidence for establishing personal identity whenever complete or partial footprints are recovered at crime scene and forensic investigations. By establishing the correlation between these measurements and stature, forensic experts can utilize footprints as valuable evidence for personal identity establishment.

Objective: To estimate and predict stature by using footprint measurements among selected undergraduates at KIU

Methods: A descriptive cross-sectional study was conducted among 346 undergraduates of KIU above 18 years old. Data were collected using a pre-tested semi-interview – based questionnaire. A stature measurement, eight footprint measurements (foot length, foot width, foot heel breadth, heel-hallux toe length, heel-index toe length, heel-middle toe length, heel-ring toe length, heel pinky toe length) collected from each participant. Statistical analysis was done using SPSS version 28.0 using descriptive, inferential statistics and linear regression models.

Results: Among the sample (n=346), there were 228 (66%) female participants. The mean age of the sample was 23.64 ± 1.39 years and the highest age of participants was recorded as 28 years and lowest age recorded was 18 years. All footprint measurements were significantly correlated with stature ($p \leq 0.001$) and the correlation coefficient (r) ranges for footprints are (male: 0.335 to 0.562, female: 0.191 to 0.587). The regression equations for foot prints were formulated with prediction accuracy of male ± 4.819 cm to ± 5.489 cm and for the female ± 5.166 cm to ± 6.263 cm.

Conclusion: Most reliable footprint parameters for stature prediction are heel-middle toe length and foot length for males whereas foot length and heel-hallux toe length for females. These findings indicate a strong association between footprints, and stature, suggesting their potential as reliable indicators for estimating an individual's height.

Keywords: *Footprint measurements, Forensic investigations, Stature estimation, Sri Lankans*

Acknowledgment: Student research grant by KIU

The Impact of the Past Three-year Economic Crisis on Type 2 Diabetes Mellitus Patients' Self-care Practices and Healthcare Expenditure in Southern Sri Lanka: A Cross Sectional Study

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Background: The impact on the Sri Lankan population from the economic crisis occurred over past three years warrants significant attention. The management strategies associated with chronic disease conditions, such as diabetes mellitus (DM), are subject to change based on individuals' experiences during economic transformations.

Objectives: To assess the impact of the past three-year economic crisis on self-care practices, care-seeking behaviour, and healthcare expenditure among Type 2 DM patients at primary care institutions in Southern Sri Lanka

Methods: A descriptive cross-sectional study was conducted in five primary care institutions (Ahangama, Baddegama, Hikkaduwa, Rathgama and Unawatuna) in the Galle district of Southern Sri Lanka recruiting 425 participants using a convenient sampling technique. A self-developed, pre-tested, interviewer-administered questionnaire was used to collect data.

Results: The majority of the study sample consisted of female individuals (79%) aged between 51-65 years (46%), who had been diagnosed with Type 2 DM for a duration of less than five years (41%). The economic crisis had a substantial influence on self-care practices, particularly on recommended dietary habits (76%), with females experiencing a notable impact than males ($p=0.027$). Furthermore, the economic crisis had an impact on blood glucose testing (24%) and adherence to prescribed medications (22%). However, the crisis did not exert a significant effect on healthcare-seeking behaviour. The cost spend by the individuals for medication was decreased ($p<0.001$), and blood tests was increased ($p<0.001$) significantly after the economic crisis.

Conclusions: These findings highlight the profound consequences of the economic crisis on DM patients' ability to adhere to self-care practices and healthcare expenditure. However, the study establishes a baseline, and further research is needed to fully understand the burden of this issue.

Keywords: *Diabetes mellitus, Economic crisis, Healthcare expenditure, Self-care practices, Sri Lanka*

Antibacterial Effects of Selected Ayurvedic Plants and Selected Cosmetic Products Used by KIU Undergraduates, against Acne-inducing Bacteria *Staphylococcus aureus*

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Background: Acne is one of the most prevalent dermatologic diseases in the world. The development of resistance to antibiotics provides for further attempts to search for new antimicrobial agents to combat infections and overcome the resistance and side effects of the currently available antimicrobial agents. Therefore, this study was aimed at screening selected Ayurvedic medicinal plants for their antimicrobial activity against *Staphylococcus aureus* (*S. aureus*).

Objectives: To determine the antibacterial activity of selected seven medicinal plants (MPs) and five cosmetic products against *S. aureus*, that causes acnes

Methods: Antibacterial activities of methanolic extracts of seven MPs, against *S. aureus* were assessed by agar well diffusion assay and MIC. Antibacterial activities of five cosmetic products which are used to treat acnes, were assessed by well diffusion assay. Vancomycin was used as the positive control and 10% DMSO was used as the negative control. Five cosmetic products were selected from KIU undergraduates based on an online survey.

Results: Methanolic extracts of *Phyllanthus emblica* L. exhibited potent antibacterial activity against *S. aureus*, with an average zone of inhibition of ≈ 20.66 mm. The MIC was detected as 100mg/mL. Positive control, *Senna auriculata* L., *Rubia cordifolia* Linn, *Hemidesmus indicus*, *Cassia alata* L., *Curcuma Zedoaria*, *Acalypha indica* L. showed average of inhibition zones (IZs) of ≈ 22.1 mm ≈ 17 mm, ≈ 16.6 mm, ≈ 16 mm, ≈ 13.3 mm, ≈ 12 mm and ≈ 11 mm, respectively. IZs of cosmetic products were detected as ≈ 44 mm, ≈ 32.5 mm, ≈ 18 mm, ≈ 15 mm and ≈ 13 mm.

Conclusion: *Phyllanthus emblica* L. displayed the most potent antibacterial activity against *S. aureus*, that causes acnes, and all seven medicinal plants showed antibacterial activity. Active ingredients of cosmetic products are clindamycin antibiotic, tea tree extraction, rose extraction, golden jojoba oil and neem extraction respectively. Clindamycin antibiotic included product and tea tree extraction included product displayed the most potent antibacterial activity. Other three products showed minimum size of IZs.

Keywords: Antibacterial activity, MIC, *Phyllanthus emblica* L., *Staphylococcus aureus*, Well diffusion assay

Acknowledgment: KIU Undergraduate Research Fund

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Preliminary Study on Evaluation of Knowledge, Attitudes and Practices of Pharmacy Workers on Generic vs Branded Medicine in Colombo District, Sri Lanka

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Background: The pharmaceutical industry plays a role in fulfilling basic human needs by ensuring the highest standards of health. In addition to the registered pharmacists, there are apprentice pharmacists and other supporting staff working in the Sri Lankan pharmacy system. Although there are locally produced generic medications accessible in the Sri Lankan pharmacy system, branded medications are prioritized by some of the medical professionals and pharmacy staff for a variety of reasons.

Objective: To examine pharmacy employees' knowledge, attitudes, and practices (KAP) about the distribution of generic vs. branded medications in the Colombo area to evaluate the correct operation of a pharmacy

Methods: Using a structured questionnaire, a descriptive cross-sectional study was carried out among pharmacy employees (n=100) in the Colombo area, comprising pharmacists and non-pharmacists.

Results: Out of 100 participants, 15% were pharmacists, 37% were assistant pharmacists and 48% were pharmacy-supporting workers. Among the participants, 60% had a view of substituting generics for branded medicines in all cases where a generic is available. While 14% disagreed with that, 26% were neutral. However, 61% believed some medicine brands are more effective, and 6% disagreed. Among participants, 33% mentioned that sometimes they believe some brands are more effective. Further, 5% of participants always select other brands in addition to the brand which the doctor has prescribed. While 89 % are only selected to other brands when the prescribed brand is unavailable, 6% have never done so. Also, 93% of participants usually inform the patients when they change the brand, and 7% do not inform.

Conclusions: Although, non-pharmacists are not directly involved in dispensing of the drug to the patient, their KAP on medicine is important for the proper functioning of the pharmacy system. Hence, it is concluded that some workers at pharmacies require further improvement based on KAP on generic vs branded medicine.

Keywords: *Branded medicine, Generic, Pharmacist*

Evaluation of the Effectiveness of a Modified Cellophane (Scotch) Tape Method to Diagnose Enterobiasis in a Selected Paediatric Population in Sri Lanka

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Background: Enterobiasis caused by *Enterobius vermicularis* is the commonest worm infection among paediatric population. Though paediatricians manage enterobiasis regularly, the recurrent disease has always been a challenge because of auto-infections and re-treatment with single dose of drug. Hence it is very important to confirm the enterobiasis using a feasible diagnostic method. The commonly used diagnostic method is the scotch tape method. However, developed countries have manufactured user-friendly, risk-free modified scotch tape kits for this purpose. Such kits are not freely available in Sri Lanka due to high cost.

Objective: To modify the existing diagnostic method of enterobiasis as a user-friendly diagnostic kit using locally available material

Methods: The study population (n=131) consisted of aged 3-6-year-old children at selected four preschools in Matara district. A self-administered questionnaire was used to collect data on the satisfaction assessment of the test kit from guardians of the child who perform the test. Different materials (Branded cello tapes and polythenes) were collected from the local market, and a modified kit was prepared under the supervision of experts. The newly developed test kit was tested with a satisfactory assessment using the study group. Samples were assessed microscopically for *E. vermicularis* eggs, and the positive rate was calculated. A satisfactory score was generated using collected questionnaires.

Results: A total of 11 children were positive while 120 children were negative out of 131 anal swabs. Hence positive rate is 8.39 % in above selected 4 preschools. Satisfactory assessment score for the collection of samples using that kit was 11.9, satisfactory assessment score for test protocol was 12.87, satisfactory score for the appearance of test kit was 10 and satisfactory score for transportation of test kit was 1.77. This score can be improved increasing the sample size. Because of the corona pandemic, poor responses of the guardians and time limitations sample size was reduced.

Conclusions: This test kit can be used to diagnose the true state of enterobiasis because the modified scotch tape can collect *E. vermicularis* eggs successfully. Further studies need to be taken to compare with conventional test method.

Keywords: Enterobiasis, *Enterobius vermicularis*, Scotch tape method, Test kit

Knowledge and Attitude of Husband on the Preparation of Motherhood of Their Wives during the Pregnancy: A Hospital-based Cross-sectional Study

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Background: Preparation of motherhood (POM) is an intermediate process of active, conscious, and positive participation that favors the transition towards motherhood. Husband has a huge role in POM of his wife/partner. Their support and contribution are crucial for having a healthy infant. Hence, the husband should be knowledgeable, and share the responsibility with the wife in the critical milestone of women's lives. This eventually leads to better pregnancy outcomes and a healthy generation.

Objective: To assess the knowledge and attitude of husbands on the POM of their wives during the pregnancy who attend the antenatal clinics (ANC) of Teaching Hospital Mahamodara (THM)

Methods: A hospital-based cross-sectional study was carried out with the participation of 310 conveniently selected husbands of pregnant women who attended the ANC of THM during pregnancy. A pre-tested self-administered questionnaire with close ended questions was administered that included 35 questions to evaluate the knowledge and eight statements to evaluate attitudes. Knowledge was categorized into three levels (poor; 0-12 marks, average; 13-24 marks and good; 25-35 marks). Descriptive statistics, independent sample t-test and one-way ANOVA test were used to analyse data using SPSS version 26.0.

Results: Mean(\pm SD) age of the participants was 20.40 (\pm 0.61) years old. Participants were well aware about the clinic visits, investigations, nutrition, rest, breastfeeding, danger signs and mental well-being while they had comparatively less awareness on nutritional supplementation, sexual activities, and minor complications. Mean (\pm SD) knowledge score of the participant was 25.38 (\pm 4.88). Among the participants, 57.4 % (n=178) had good knowledge while 41.3 % (n=128) had average level of knowledge and only 1.3 % (n=4) had poor level of knowledge on POM. Husband's level of knowledge was only associated with number of children in the family ($p=0.018$) and trimester of pregnancy of wife ($p<0.001$). Higher mean score of husband's knowledge of POM was seen in the families with higher number of children and advanced (3rd) trimester. All the study participants (100%) had positive attitudes regarding the POM.

Conclusions: Husbands of expectant mothers attending ANC of THM had a good level of knowledge and positive attitudes regarding the POM. However, comparatively a less awareness was seen on nutritional supplementation, sexual activities, and minor complications. These aspects need to be addressed in improving the better pregnancy outcomes and husband-wife relationship during the pregnancy period.

Keywords: *Attitude, Husband, Knowledge, Motherhood, Preparation*

PP 32**Assessment of Homesickness and Adjustment among First-year Undergraduates, Faculty of Allied Health Sciences, University of Ruhuna**

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Background: Homesickness is a prevalent occurrence observed among university undergraduates. Students who suffer from homesickness may encounter challenges in adapting to their new surroundings, which might hinder their ability to engage in effective learning, participate in academic activities, and maintain their psychological well-being.

Objectives: To evaluate the levels of homesickness and adjustment experienced by first-year undergraduates enrolled in the Faculty of Allied Health Sciences at the University of Ruhuna

Methods: This descriptive cross-sectional study was conducted among first-year undergraduates in the Faculty of Allied Health Sciences, University of Ruhuna (n=231). Socio-demographic data levels of homesickness and coping strategies were collected by using a pre-tested, self-administered questionnaire. Data were analysed using SPSS version 25.0.

Results: In the present study, the majority of undergraduates were females (71%) and they were 23 years old. The majority were in boarding places (59.7%) with their friends (77.5%). The prevalence of homesickness was 97.4%. Merely 89.2% of students communicate with their friends and 87.9 % spend time in social media every day to overcome homesickness and to adjust with new environment. Heavy study workload (n=208), not having delicious meals (n=189), and adjusting problems to study in English were stated by undergraduates as major reasons for homesickness. Homesickness was associated with the type of residence ($p=0.003$), and with whom they were staying ($p=0.000$).

Conclusions: The majority of students experienced homesickness, whereas a small number of participants reported experiencing severe homesickness. Students have dedicated time to engaging in communication with their peers as a means of adapting to their unfamiliar surroundings. Primary factors contributing to homesickness among undergraduates are the substantial workload and the absence of appetizing meals. The place of living and the presence of a companion has a major impact on the overall score of homesickness.

Keywords: *Adjustment, Homesickness, Undergraduates*

Determinants of Sleep Quality among Pregnant Women in Teaching Hospital Mahamodara, Galle, Sri Lanka

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Background: Sleep is a physiological process that vital for enhancing physical and mental well-being of pregnant women and their fetuses. Nevertheless, inadequate quality sleep increases the risk of developing short- and long-term pregnancy complications.

Objective: To assess determinants of sleep quality among pregnant women in Teaching Hospital, Mahamodara (THM)

Methods: A hospital-based descriptive cross-sectional study was carried out with antenatal mothers (n=245) who selected from antenatal clinics and wards in THM. Sleep quality, antenatal depression and antenatal anxiety were assessed using validated Sinhala versions of Pittsburgh Sleep Quality Index (PSQI), Edinburgh Postnatal Depression Scale (EPDS) and Generalized Anxiety Disorder 7 Scale (GAD-7), respectively. Data were analysed using SPSS version 25.0.

Results: Majority of participants were married, 73.1% unemployed, 43.3% education up to O/L and were primi mothers in their third trimester. Descriptive data of PSQI score was 4.85 (SD=2.31). Of the sample, 60.8% participants had good sleep quality and they didn't experience depression and anxiety. Age between 34–41 years and third-trimester women had higher rates of poor sleep quality. Gestational age and increasing maternal age ($p<0.05$) were significantly associated with sleep quality. Varying quality of sleep was identified among three-trimesters with subjective sleep quality, sleep latency, habitual sleep efficiency and sleep disturbances ($p<0.05$). Comparison with the first and second trimester, third trimester mothers had higher global PSQI score (5.22 ± 2.35), subjective sleep quality (1.23 ± 0.70), sleep latency (1.25 ± 0.86), habitual sleep efficiency (0.14 ± 0.43), and sleep disturbances (1.39 ± 0.58).

Conclusions: Majority of the participants had quality sleep. Anxiety, depression, increased age and gestational age are major determinants of sleep quality. It is better to screen for sleep pattern, planning clinic sessions to enhance awareness of quality sleeping during pregnancy period.

Keywords: Antenatal mothers, Anxiety, Depression, Pregnancy, Sleep quality

Self-Care Practices for Arteriovenous Fistula among People Receiving Hemodialysis at Teaching Hospital Karapitiya

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Background: Kidney failure is the end of the continuum of chronic kidney disease (CKD). The increasing prevalence of CKD has been a major public health problem. Hemodialysis (HD) is the most common treatment modality to sustain the lives of people with CKD. People receiving HD need to follow a complex treatment plan. Arteriovenous fistula (AVF) care is one of the main aspects of treatment regimens. Improving the level of AVF self-care behavior by people receiving HD is an effective way to reduce the occurrence of complications and mortality.

Objective: To assess self-care practices for arteriovenous fistula among people receiving hemodialysis at Teaching Hospital Karapitiya

Methods: A descriptive cross-sectional study was conducted in hemodialysis unit at Teaching Hospital Karapitiya involving 167 people on HD. Data were obtained through an interviewer-administered questionnaire which included socio-demographic data, clinical information, and self-practices of AVF care about the patients. Data were analysed using SPSS version 25.0, and significance was kept at $p < 0.05$.

Results: Majority of the patients (25.1%) were in the age category of 50-59 years and were males. More than 60% of patients had moderate level self-care practices and 37.7% of them had high level self-care practices on AVF care. Self-care practices significantly differed according to associated factors like socio-demographic (i.e., marital status, use of cigarettes and alcohol) and clinical information (i.e., availability of information on AVF care) ($p < 0.05$).

Conclusion: The study findings gave insight about self-care practices for arteriovenous fistula care among people receiving hemodialysis at teaching hospital Karapitiya. The majority of the patients had moderate level of self-care practices on AVF care. A continuous program of health education should be encouraged, and periodic evaluation of the patient's practices will aid in developing future educational strategies towards achievement of necessary care.

Keywords: *Arteriovenous fistula, People receiving hemodialysis, Self-care practices*

Knowledge, Attitudes and Practices of Pelvic Floor Health among Women Attending Gynecology Clinic at Teaching Hospital Mahamodara

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Background: Urinary incontinence (UI), pelvic organ prolapses (POP), and pelvic floor dysfunctions (PFDs) are common health issues among women, impacting their physical well-being, social interactions, and psychological health. Despite the prevalence of these conditions, many women suffer in silence without seeking medical advice.

Objectives: To assess the level of knowledge regarding the main pelvic floor disorders, specifically UI and POP, among women attending gynecology clinics at Teaching Hospital Mahamodara (THM) and also to evaluate their attitudes, practices related to pelvic floor health and associated factors for poor knowledge and attitudes

Methods: A descriptive cross-sectional study was conducted in May 2023, involving 101 women aged 20-55 years, attending Maternity THM gynecology clinics. Data were collected using a pre-tested, self-administered questionnaire, and a convenient consecutive sampling method was employed. Data were analyzed using SPSS version 25.0 with descriptive, one-way ANOVA and chi-square statistics.

Results: The majority of respondents (50.5%) were in the age category of 44-55 years, with 92.15% of participants being married, and 41.6% having two children. Most participants (66.3%) demonstrated a moderate level of knowledge regarding PFDs with a mean knowledge score of 49.37 (SD±19.60). Knowledge levels were significantly associated with age ($p=0.002$), marital status ($p=0.034$) and prior awareness of UI and POP ($p<0.001$). POP knowledge non-proficiency (14.9%) was greater than UI knowledge non-proficiency (12.9%). A significant association was identified between participants' awareness of pelvic floor muscle exercises (PFMEs) and POP knowledge ($p=0.043$). The majority of participants (63.4%) displayed a positive attitude towards pelvic floor health, which was associated with employment status, while 6.9% had neutral and 29.7% participants had a negative attitude. Most participants (77.2%) were unaware of PFMEs, and only and only 1% practiced them effectively.

Conclusions: The study reveals a moderate level of knowledge regarding pelvic floor disorders among women attending gynecology clinics at THM. While many participants demonstrate a positive attitude towards pelvic floor health, the practice of pelvic floor muscle exercises remains inadequate. Addressing this knowledge-practice gap is essential to enhance women's pelvic floor health and overall quality of life.

Keywords: Attitudes, Knowledge, Pelvic floor health, Pelvic organ prolapse, Urinary incontinence

Prevalence and Factors Associated with Head Lice Infestation among Primary School Girls in Galle Educational Division

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Background: Head Lice Infestation (HLI), which is medically termed as pediculosis capitis is caused by *Pediculus humanus capitis*. It is a significant health concern among school children. Although HLI is associated with minimal morbidity, there is a substantial psychological distress linked to HLI among affected children and their parents.

Objective: To determine the prevalence and factors associated with HLI among girls attending primary schools in the Galle educational division

Methods: A community-based descriptive cross-sectional study was conducted among 380 female students studying in grade five in Galle educational division, using cluster randomization. Students' scalps were examined. Diagnosis was made by the identification of eggs (nits), nymphs, or adult lice with the naked eye within 20 seconds during scalp examination. Data were collected by pre-tested, self-administered questionnaire on socio-demographic and hygienic practices, from the parents. Data were analyzed using SPSS version 25.0. Level of significance was considered at $p < 0.05$.

Results: The study showed that there is a prevalence of 58.2 % of HLI in this group (221/380). It was common among students with increased number (more than four) of family members (67.8 %), number of siblings more than two (70.1 %) and with monthly income lower than fifty thousand rupees (65.0 %). When considering the hygienic practices, sharing of personnel comb, sharing of other personnel items such as towel, pillows and bedlinens were significantly associated with HLI ($p < 0.05$). Frequent scalp scratching was also significant among infested children ($p < 0.05$).

Conclusions: Prevalence of HLI was considerably high among girls of primary school and positive association was observed with increased family members, siblings and low family income. Sharing of personnel care items were associated with HLI.

Keywords: Associated factors, Disease burden, Head lice, Prevalence

The Prevalence of Urinary Incontinence and Its Effects on Daily Tasks of Women after Childbirth in Horana MOH Area

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Background: Urinary incontinence (UI) is defined as the involuntary leakage of urine that occurs by accident, without being able to control it. Urinary incontinence in women is more prevalent during pregnancy and after childbirth due to hormonal and physical effects. It may affect daily tasks including self-care, childcare, household and occupation-related activities.

Objectives: To identify the prevalence of UI and its effects on the ability to perform daily tasks among the postpartum women in the Horana MOH area

Methods: A descriptive cross-sectional study was conducted among 242 women from five selected clinics in the Horana MOH area. Women from two months to one year after delivery were participated in the study. The urinary symptoms were assessed using a validated international consultation on incontinence questionnaire-female lower urinary tract symptoms (ICIQ – FLUTS) and a pre-tested questionnaire was used to assess the ability to perform daily tasks. The data were analysed using SPSS version 25.0.

Results: The mean age(\pm SD) of the participants was 30.17(\pm 5.1) years. The prevalence of UI among participants was 21.9% (n=53). The prevalences of stress, urge and mixed UI were 37.8%, 11.3% and 17.0%, respectively. The mode of delivery had a significant association with the UI ($p=0.02$). Only 4 % of the affected women sought medical consultation and the main reason for not seeking medical advice was the intention of thinking that UI was normal after childbirth (84.9 %). Personal hygienic tasks were the most affected daily tasks in women with UI (37.7 %).

Conclusions: UI is a common occurrence during the period of one year after childbirth among postpartum women, while stress UI is the most common type. UI is most likely to occur in women with normal vaginal deliveries. Personal hygiene tasks were the most affected type of daily tasks. Therefore, healthcare workers including public health midwives should assess postpartum women for UI and other urinary symptoms.

Keywords: *After childbirth, Daily tasks, Prevalence, Urinary incontinence, Urinary symptoms*

Evaluation of Antimicrobial Effect of a Skin Formulation Using Different Combinations of Selected Herbal Essential Oils

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Background: Microbial resistance is a global health concern, prompting the development of new antimicrobials. Most essential oils (EOs) have good antimicrobial properties. Hence EOs can be used as alternatives to combat antimicrobial resistance.

Objective: To evaluate the antimicrobial effect of a skin formulation using different combinations of selected herbal EOs

Methods: Based on detailed literature review five EOs (cinnamon bark, clove, citronella, nutmeg and eucalyptus) with good antimicrobial activity were selected. Their antimicrobial activity was tested against *Staphylococcus aureus*, *Pseudomonas aeruginosa*, and *Candida albicans* using disc diffusion assay and micro broth dilution method. Positive controls for bacteria and fungi were Gentamycin IV and Fluconazole IV injections respectively. Two EOs combination ratios (ratio 1- equal volume from each oil, ratio 2- equal volume from cinnamon, clove, and citronella oil) were selected and their antimicrobial activity was evaluated using the disc diffusion assay. Based on the results creams were formulated and their antimicrobial activity was measured using the well diffusion assay. The creams were evaluated for physical stability for one month period.

Results: All five EOs showed inhibitory activity against tested strains. Cinnamon oil showed the highest activity against *Candida albicans* (35.33mm±0.57, 3.351mg/mL), while nutmeg oil showed the lowest activity against *Pseudomonas aeruginosa* (9.66mm±1.52). Cinnamon oil and positive control showed no significant antimicrobial activity against *Candida albicans* ($p>0.05$) while the positive control had significant antimicrobial activity against other organisms ($p<0.05$). Both ratios showed a synergistic effect against *Staphylococcus aureus* (21.33mm±0.57, 29.00mm±1.00) and an antagonistic effect against *Candida albicans* (20.33mm±0.57, 18.66mm±0.57). Both formulated creams have shown good antimicrobial activity against *Staphylococcus aureus*, *Pseudomonas aeruginosa*, and *Candida albicans* and they were stable under tested parameters.

Conclusions: Combinations of cinnamon bark, clove, citronella, nutmeg, and eucalyptus oils can create effective antimicrobial creams making a potential solution for combating antimicrobial resistance and treating skin infections.

Keywords: Antimicrobial, Cream, Essential oils, Herbal, Skin infections

Adverse Drug Reactions and Drug Interactions of Non-Steroidal Anti-Inflammatory Drugs in Elderly Patients Attending Teaching Hospital Karapitiya

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Background: Elders are highly susceptible for Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) related Adverse Drug Reactions (ADR) and drug interactions if they are treated with number of medications for multiple comorbidities.

Objective: To evaluate the NSAIDs related adverse drug reactions, and drug interactions among the elderly patients attending outdoor pharmacy of Teaching Hospital Karapitiya (THK)

Methods: A descriptive cross-sectional study was conducted at the outdoor pharmacy of THK. Sample consisted of 317 elderly patients over 60 years age who were attending routine clinics and taking NSAIDs from the outdoor pharmacy. Data were collected using an interviewer-administered questionnaire consisted of 21 questions. SPSS version 25.0 and Microsoft Excel 2013 were used in the data analysis. Chi-squared test was used to identify the association between categorical variables.

Results: NSAIDs related ADRs were experienced by 44.5% of the participants. Dyspepsia was the most frequently occurred NSAIDs related ADR (81.6%). Reporting dyspepsia is significantly associated with the type of NSAIDs prescribed ($p=0.001$). Among the patients reporting dyspepsia, majority (77.4%) were prescribed with non-selective NSAIDs. The patients co-prescribed with PPI had less percentage (47.1%) for dyspepsia ($p<0.001$). Majority of the participants, (67.8%) were prescribed with at least one potentially interacting drug with NSAIDs. Drugs for hypertension, heart failure and other cardiac problems (42.90%), and antithrombotics (34.38%) were the commonly co-prescribed potentially interacting drugs with NSAIDs. There were 4.7% of elders prescribed with triple whammy combination. Polypharmacy was observed in 83% who were on NSAIDs. There was a significant association between polypharmacy and the prevalence of potentially interacting drugs ($p=0.001$).

Conclusions: Dyspepsia is the most common NSAID related ADR reported in elderly patients. Co-prescription of drugs that have potential interactions with NSAIDs is common among elders. Multiple morbidities and polypharmacy are common characteristics among patients who were prescribed potentially interacting drugs.

Keywords: ADR, Elderly, NSAID, Polypharmacy, Tripple whammy

The Accuracy of Household Spoons in Measuring Liquid Oral Medications in the Karapitiya Suburb

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Background: Household spoons, with their diverse sizes, shapes, and volumes, are commonly used for administering liquid medications, potentially causing dose variations.

Objective: To investigate the accuracy of household spoons in measuring oral liquid medications

Methods: Teaspoons (n=45) and tablespoons (n=15) were gathered from homes in Karapitiya using convenient sampling method. The volumes of spoons were measured by two methods; the weighing method and the volumetric method. In the weighing method, volume (v) was calculated using $v=m/\rho$, and in the volumetric method, using graduated cylinders. Deviations, $\geq 10\%$ of the measured volume from the expected volume were considered to fail the accuracy test (USP specifications). Independent sample t-test was used for comparison of measured volumes with expected volume and $p < 0.05$ was considered statistically significant.

Results: In the weighing method, 93.3% of tablespoons had lower and 6.67% had higher volume than the anticipated volume and 20.0% of the samples satisfied the USP requirements. In the volumetric method, 80.0% of tablespoons had lower volumes, 6.67% had higher volumes, and 13.3% were in the same volume. Among them, 26.67% fulfilled the USP standards. Further, results of the weighing method showed that 93.33% and 6.67% teaspoons, had lower and higher volumes than the expected volume respectively. Only 8.89% of the sample satisfied the USP criterion. According to the volumetric method, 91.10% of teaspoons had less volume, 4.40% had higher volume than the anticipated volume, and 4.40% were equal to 5.00mL. Also, 22.2% of teaspoons met the USP standards. In both the weighing and volumetric methods, there were significant differences between volume measured with tablespoons (weighing method: 9.00 ± 3.39 mL; volumetric method: 9.70 ± 3.45 mL, $p \leq 0.001$), and teaspoons (weighing method: 4.02 ± 0.97 mL; volumetric method: 4.00 ± 0.83 mL, $p \leq 0.001$) and their expected volumes.

Conclusion: Volumes of household spoons are inaccurate and inappropriate to measure oral liquid medications. Accurate dosing devices should be used for administering medications.

Keywords: *Dosing, Medication errors, Tablespoons, Teaspoons, Volumetric method, Weighing method*

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Diagnostic Significance of Individual Glucose Values in 75 g Oral Glucose Tolerance Test in a Group of Pregnant Women with Gestational Diabetes Mellitus

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Background: Gestational Diabetes Mellitus (GDM) is a common health complication among pregnant women. Diagnosis of GDM is based on the values of Oral Glucose Tolerance Test (OGTT), which includes plasma glucose concentration of fasting (12 hour), 1st hour and 2nd hour samples following a standard oral glucose load.

Objective: To assess the diagnostic significance of individual glucose values in 75g OGTT in a group of pregnant women

Methods: The study was conducted in antenatal clinics at Teaching Hospital Mahamodara. A total of 150 pregnant women during 24-28 weeks of gestation were enrolled in the study. Data collection was carried out via an interviewer-administered questionnaire followed by retrieval of laboratory data on OGTT of the study subjects.

Results: Seventeen pregnant women (11.33%) were diagnosed as GDM by OGTT based on the World Health Organization criteria for diabetes in pregnancy. The diagnosis was based on individual values of fasting or 2nd hour glucose concentrations or by increased levels in more than one of those parameters. However, none of the mothers were diagnosed solely based on the 1st hour glucose values. Further, the findings on OGTT revealed significant positive correlations between fasting, 1st hour and 2nd hour glucose values ($r^2=0.486$, $r^2=0.511$, $r^2=0.750$, $p=0.000$) in the selected study population. GDM was associated with risk factors such as previous history of diabetes mellitus ($r^2=0.142$, $p=0.084$) or GDM ($r^2=0.102$, $p=0.213$), maternal overweight ($r^2=0.014$, $p=0.998$) and excessive sweet consumption ($r^2=0.198$, $p=0.015$).

Conclusions: Present findings revealed that, measurement of only 2nd hour glucose value is not sufficient for accurate diagnosis of GDM. Considering the diagnostic significance of both fasting and 2nd hour glucose values compared to the 1st hour glucose value in the diagnosis of GDM, a modified OGTT including fasting and 2nd hour glucose estimations could be used for accurate diagnosis of GDM.

Keywords: *Gestational diabetes mellitus, Oral glucose tolerance test, Pregnant women, Risk factors, World Health Organization diagnostic criteria*

Knowledge, Attitudes and Practice towards Epilepsy among Non-epileptic Adults in Sri Lanka

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Background: Epilepsy is a common neurological disorder that impacts individuals and communities worldwide. Understanding and support from the general population are crucial for creating an inclusive and empathetic environment for individuals with epilepsy. However, limited research exists on the knowledge, attitudes, and practices (KAP) towards epilepsy among non-epileptic individuals, particularly among adults in Sri Lanka

Objective: To assess the KAP towards epilepsy and associated socio-demographic characteristics among adults above 18 years old in Sri Lanka

Methods: A descriptive cross-sectional study was conducted using a pre-tested self-administered questionnaire distributed both online and through in-person interviews among 389 adults (non-epileptic) from various districts in Sri Lanka. The questionnaire assessed participants' KAP towards epilepsy separately and categorized as good, bad, and average based on the score.

Results: The majority (n=241) of the sample was between 18-28 age group. Majority of them were females (54%) and 38% were residents in Kalutara district. Majority of participants had poor knowledge (65%) and poor attitudes (52%) towards epilepsy, while their practices were rated as average (55%). Correlation analysis showed a positive relationship between knowledge, attitudes, and practices ($p<0.05$). Additionally, an association was seen between knowledge and age, living district and current employment status ($p<0.05$), between attitude and ethnicity, living district, completed highest education level and current employment status ($p<0.05$) and between practices and, living district and highest education level ($p<0.05$).

Conclusion: Poor level of knowledge, poor attitude, and average level of practices on epilepsy was seen among non-epileptic individuals above 18 years old in Sri Lanka. The outcomes indicate a critical need for educational campaigns and awareness programs to enhance community understanding of epilepsy. Future research should focus on designing interventions to increase awareness and knowledge about epilepsy among the general population.

Keywords: Attitude, Epilepsy, Knowledge, Practice, Sri Lanka

Prevalence and Associated Signs and Symptoms of Food Allergies among Selected Group of Adults Population: A Cross-sectional Study in Sri Lanka

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Background: Food allergies are a significant global public health concern, affecting individuals of all ages. However, limited research exists on the prevalence and symptom patterns of food allergies among adults in Sri Lanka.

Objective: To assess the prevalence of different food allergies and associated symptoms among a selected group of adult population in Sri Lanka.

Methods: A descriptive cross-sectional study was conducted using a pre-tested self-administered questionnaire distributed online as a Google form among 392 adults aged 18-36 from various districts in Sri Lanka using a random sampling method. The survey consisted of questions regarding socio-demographic data, food allergy according to vegetables, fruits, meat, seafood, beverages, dairy products, and symptoms of food allergy.

Results: Of the sample, 42% reported that they have food allergies while 52% had no experience of food allergies. When considering specific food categories, the prevalence of allergies for meat, vegetables, fruits, beverages, sea food, dairy products, nuts were 18.4%, 3.6%, 17.6%, 5.6%, 14.5%, 2.8%, 0.8% respectively. Among those who had an allergy for meat, 13.8% were allergic to beef. When considering Fruits, 16.8% were allergic to pineapple. Only 2.8% were allergic to mushrooms among those allergic to vegetables. Among those with allergy to beverages 5.9% were allergic to alcoholic drinks. Only 1.5% were allergic to curd and 12% were allergic to prawns. Chlorphenamine was the most commonly used drug for food allergies (19.4%) while using Cetirizine (2.6%) and Prednisolone (1.5%) too. The most prominent symptoms of allergies were itching, and red rashes and the rate was 26.8% (n=105).

Conclusions: Significant proportion of adults participated in the study had food allergies while showing the varying degree for different food groups including meat, fruits and seafoods. These findings can inform healthcare professionals and individuals about the prevalence and management of food allergies, contributing to improved healthcare strategies and public awareness.

Keywords: *Chlorphenamine, food allergy, meat, mushroom, seafood*

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Association of Body Mass Index and Fasting Blood Glucose Levels in a Selected Undergraduate Population in KAATSU International University Sri Lanka

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Background: Obesity and type 2 diabetes are progressively more common in Sri Lanka. Higher body mass index (BMI) and increased fasting blood sugar (FBS) could lead to obesity and type 2 diabetes respectively. Undergraduates tend to take fast foods frequently due to busy lifestyle. Therefore, insights regarding the health condition of them can be obtained by examining how FBS levels and BMI correspond to the undergraduate population.

Objective: To investigate the relationship between BMI and FBS levels among a selected group of undergraduates in KAATSU International University (KIU)

Methods: A cross-sectional study was conducted enrolling 264 undergraduates. FBS level was measured using the glucose oxidase method using Robotnik Biochemistry analyzer. BMI was calculated using the participant's height and weight measurements. Chi-squared test was used to determine the association between BMI and FBS.

Results: Majority of the participants were females (64.0%, n=169). A higher number of participants (46.6%, n=123) had normal BMI, while 21.2%, n=56 was obese and 14.8%, n=39 was overweight. Two hundred and thirty-one participants had normal FBS levels (88.0%), 12.1%, n=32 had FBS levels in pre-diabetic range, and one individual (n=1) had diabetes. Out of 123 individuals with normal BMI, FBS level of 111 (42.0%) students was in normal range and 12 (4.6%) participants were in pre-diabetic range. Mean (\pm SD) FBS levels of males and females were 91.40 (\pm 9.21) and 89.40 (\pm 9.24), respectively. Statistically significant association was not observed between the FBS and BMI in the selected population ($p>0.05$).

Conclusions: Though the BMI of participants ranged from normal, overweight to obese, FBS levels of majority were in reference interval. No statistically significant association was seen between FBS and BMI in the selected population.

Keywords: *Body mass index, Fasting blood glucose, Obesity, Sri Lanka, Undergraduates*

Fasting Blood Sugar Levels, Fasting Practices and Associated Factors among Hindu Patients with Diabetes Mellitus at a Primary Care Centre in Jaffna

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Background: Most Hindu households in Jaffna practice fasting during the festival season. Fasting or abstinence from certain foods and feasting are known to be associated with changes in the level of blood sugar.

Objectives: To assess fasting blood sugar (FBS) levels, Hindu festival fasting practices and associated socio-demographic and lifestyle factors among Hindu patients with diabetes mellitus attending the Family Health Centre (FHC), Kondavil, Jaffna, during the Hindu festival season

Methods: A cross-sectional study was carried out among patients with diabetes mellitus attending FHC Kondavil from September to November 2022. An interviewer-administered questionnaire was used to collect data on fasting practices during the past 24 hours. FBS data were extracted from the FHC laboratory register. Mann-Whitney U test was used to test for differences in FBS by fasting practices, socio-demographic and lifestyle factors. $p < 0.05$ was considered as statistically significant.

Results: Of total, 102 (80.9%) out of 126 patients with diabetes registered at the FHC participated. Mean(\pm SD) age was 60.4(\pm 11.3) years; 57.8% were ≥ 60 years. Majority was females (68.6%), married (98.0%), without GCE O/L qualifications (58.9%), unemployed (75.5%), with a monthly household income of <LKR 50,000 (91.2%). In the sample, 23.5% ($n=24$) reported fasting during the past 24 hours; all ($n=24$) had skipped breakfast; six (5.9%) skipped breakfast and lunch; 18 (75%) skipped only breakfast, and none skipped dinner. Among those who fasted, one (4%) did not take prescribed medication. FBS did not differ significantly between those who fasted and those who did not (median 119.3 vs. 105.0 mg/dL; $p=0.338$). FBS was higher among those <60 years compared to those above 60 (median 130.8 vs. 100 mg/dL; $p<0.001$); and the married compared to others (median 119.4 vs. 101.4 mg/dL; $p=0.032$). Although males, those with \geq O/L qualifications and the employed had higher median FBS, the differences were not significant ($p>0.05$).

Conclusions: Hindu fasting practices were not associated with FBS. As median FBS was higher among the fasting group, a longitudinal study is needed to explore the effect of fasting and feasting during Hindu festivals.

Keywords: Diabetes mellitus, Fasting blood sugar, Hindu festival, Primary care

Qualitative Phytochemical Analysis and *In-vitro* Antibacterial Activity of *Volkameria inermis* Leaf Extracts against Common Pathogenic Bacteria

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Background: Coastal Sri Lankan *Volkameria inermis* belongs to the family Lamiaceae, is a plant with traditional ayurvedic uses. Its antibacterial properties and phytochemical composition is not scientifically explored adequately.

Objectives: To evaluate the antibacterial activities of hexane, dichloromethane and ethyl acetate extracts of *V. inermis* against common human pathogens i.e., *Staphylococcus aureus*, Methicillin resistant *Staphylococcus aureus* (MRSA), *Escherichia coli* and Diphtheroids along with phytochemical screening

Methods: Fresh leaves (750g) of *V. inermis* were extracted with hexane, dichloromethane and ethyl acetate sequentially for three times, extraction yielded 102mg, 163mg and 41mg respectively. Crude extracts were separately dissolved in DMSO (100mg/mL). Ciprofloxacin (3mg/mL) and DMSO used as the positive and negative controls. Antibacterial sensitivity was tested using agar disc diffusion assay (10µL per disc) in triplicates, and mean diameter was calculated.

Results: Hexane extract showed the highest inhibition against *S. aureus*, MRSA, and Diphtheroids with mean(±SD) inhibition zone diameters of 10.4(±0.3)mm, 11.3(±0.6)mm and 12.1(±0.6)mm, respectively. Dichloromethane extract, and ethyl acetate extract inhibited the growth of MRSA and *S. aureus* with inhibition zone diameters in the range of 8mm to 11mm, while the positive control exhibited inhibition zone diameters more than 24mm for all the tested organisms. However, none of the extracts showed inhibition of *E. coli*. Negative control did not show inhibition zones for the tested organisms. Phytochemical screening tests revealed the presence of terpenoid compounds in all of the extracts. Dragendorff's test for alkaloids and FeCl₃ test for phenolic compounds were positive only for the ethyl acetate extract.

Conclusions: Hexane and dichloromethane extracts were effective against most tested organisms. It can be concluded that relatively non-polar metabolites within the plant exhibit strong antibacterial effects. Additionally, the ethyl acetate extract shows evidence of antibacterial phenolic compounds and alkaloids.

Keywords: Antibacterial activity, Diphtheroids, Human pathogens, Sequential extraction, *Volkameria inermis*

Prevalence of Polypharmacy and Its Associated Factors among Older Adults Attending Medical Clinics at Teaching Hospital Kalutara

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Background: Polypharmacy incidence is gradually increasing with multifactorial comorbidities and its prevalence is highly reported in the elderly. Polypharmacy increases the risk of adverse drug-related events and other consequences among older adults. Assessment of the prevalence of polypharmacy and its associated factors are vital.

Objectives: To assess the prevalence of polypharmacy and its associated factors among older adults attending medical clinics at Teaching Hospital Kalutara

Methods: A descriptive cross-sectional study was carried out among randomly selected 410 volunteered older adults (>65 years) attending medical clinics at Teaching Hospital Kalutara. A pre-tested, interviewer-administered questionnaire consisted of baseline characteristics, data related to disease conditions and medication usage was used to collect data. Data were analysed using descriptive and inferential statistics using SPSS version 25.0.

Results: The age ranged between 65-95 years and the mean(\pm SD) age was 73.0(\pm 6.8) years old. The majority was female (61.4%), Sinhalese (71.8%), unemployed (51.2%), married (47.4%), and educated up to secondary education (70.1%). Hypertension (62.9%) and Diabetes (42.9%) were highly prevalent. Commonly prescribed medicines were angiotensin-2-receptor antagonists (60%), nitrates (70.1%), anti-diabetics (73.6%), analgesics (55.6%), blood coagulation-related medicines (61.4%) and hyperlipidemia medicines (52.2%). Polypharmacy was prevalent among 89.9% of older adults. Polypharmacy incidence was associated with self-income ($p=0.016$), employment ($p=0.015$), and disease conditions such as myocardial infarction ($p<0.001$), hypertension ($p<0.001$), heart failure ($p=0.004$), and stroke ($p=0.002$). Polypharmacy was not associated with other demographic characteristics such as age, gender, ethnicity, employment, and disease conditions such as chronic kidney diseases, diabetes mellitus, asthma and chronic obstructive pulmonary diseases, and thyroid diseases.

Conclusion: Polypharmacy is highly prevalent among older adults. Employment, income level, and cardiovascular diseases are associated with polypharmacy. Further studies are recommended to assess polypharmacy-related consequences among older adults.

Keywords: Ageing, Older adults, Polypharmacy, Prevalence

Google Trend Analysis of Emerging and Long-established Substance Use in Sri Lanka

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Background: Methamphetamine (“Ice drug”) has emerged as the prominent substance of concern in Sri Lanka’s illegal drug landscape. This trend calls for comprehensive efforts to combat its impact on Sri Lanka’s community. However, the act of searching for drugs on Google potentially signifies heightened interest in other addictive substances and underscores the urgency of preventive actions.

Objectives: To discern and analyze the prevailing trend of Google search within Sri Lanka regarding electronic-cigarettes and methamphetamine, compared to long-established substances (i.e., cigarettes, alcohol, and heroin). Through analyses of the search behavior related to these terms, the research seeks to shed light on the evolving patterns and interests of the populace.

Methods: Google Trends data were extracted after the date of its algorithm modifications (2022 January 1). The search parameters encompassed "electronic cigarette", "methamphetamine", "ice drug", "cigarettes", "alcohol", and "heroin". Monthly search counts were meticulously computed across the 19 months, facilitating a comprehensive comparison of the respective trends for each search topic using regression coefficient, means and standard deviations. This methodological approach ensured up-to-date and relevant insights into the search behavior of these topics.

Results: For the Google Trend search criteria, a rigorous filtration process yielded 83 days of data from January 2022 to July 2023, calculating average monthly popularity scores. Notably, the calculated averages for "ice-drug," "methamphetamine," and "electronic cigarette" were 5.7 (SD=6.6), 24.0 (SD=13.3), and 45.5 (SD=18.0), respectively. Concurrently, the popularity trends for these keywords were 0.18, 0.82, and 3.05, respectively. Google search for cigarettes, alcohol, and heroin did not show any noticeable change during this period.

Conclusions: Google Trend analysis underscores "electronic cigarette" as the dominant search trend among individuals exploring addictive substances in Sri Lanka, despite the surge in interest surrounding "ice drug" and "methamphetamine" in the latter part of 2022. Notable trends were not seen with other substances due to limitations in search algorithm and potential confounding factors. Google Trend data can provide insights into primary prevention of emerging drugs.

Keywords: *Electronic cigarette, Google Trends, Methamphetamine*

Phytochemistry and Pharmacological Uses of *Hibiscus rosa sinensis*: A Review

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Background: One of the most useful plants in nature, *Hibiscus rosa sinensis* is comprised of several different parts, each of which has its own distinct medical benefits. Pre-existing studies in pharmacology have shown that *H. rosa-sinensis* has a wide range of biological activities. Herbal health supplements and medicines, such as *H. rosa sinensis* Linn., are expected to become increasingly popular in the near future, both in everyday self-care and in professionally managed health care.

Objective: To provide updated information on the phytochemistry, pharmacological properties, and therapeutic value of *H. rosa sinensis*

Methods: Articles published in three online databases ScienceDirect, PubMed, and Google Scholar between year 2011-2021 with respect to phytochemistry, pharmacology and toxicology of *H. rosa sinensis* were considered for the review. A total number of 27 articles published in English language were considered after excluding conference papers.

Results: Our comprehensive analysis of *H. rosa-sinensis* revealed a rich array of secondary metabolites within the whole plant. These include tannin, anthraquinones, flavonoids, alkaloids, terpenes, saponins, and cardiac glycosides. Notably, the extraction process predominantly involved the use of water or water-organic solvent mixtures. The traditional uses of *H. rosa-sinensis* are diverse and encompass a wide range of medicinal applications. The flowers and roots of this plant have been historically employed for addressing various health issues, including the regulation of the menstrual cycle, treatment of liver diseases, management of high blood pressure and alleviation of cough symptoms. Fruits have also been used topically to mitigate pain associated with sprains, wounds, and ulcers. Furthermore, flower extracts have exhibited *in-vivo* hypoglycemic, cardiovascular and CNS depressant activity. Ethanol (70%) extract of dried leaves have exhibited *in-vivo* analgesic, anti-inflammatory and antipyretic activities in mice. These findings underscore the diverse pharmacological potential of *H. rosa-sinensis* and its historical significance in traditional medicine.

Conclusions: *H. rosa-sinensis* is a rich source of secondary metabolites that leads to a wide range of biological activities. Chemical constituents and the therapeutic uses associated with the plant parts and extraction methods involved. Many medicinal properties indicate that the plant could be used to develop new drugs that are highly effective in treating a wide range of disorders in future.

Keywords: Herbal, *Hibiscus rosa sinensis*, Pharmacology, Phytochemistry, Traditional medicine

Perception of Nursing Undergraduates on Usefulness of Nursing Research in Sri Lanka

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Background: Nurses are required to provide evidence-based care. Hence, the general perception of nursing students on the usefulness of research for nursing practice should be evaluated. It would provide more useful information on changing mindset of nurses to enhance the evidence-based nursing practice in future.

Objective: To understand the nursing student's perception on usefulness of nursing research and associated factors for the perception

Methods: An exploratory descriptive qualitative study was done with 28 final year nursing students with five focus group discussions selected from four government universities in Sri Lanka through the zoom platform till saturation point was achieved. They were recorded and transcribed verbatim. Thematic analysis (Braun and Clarke, 2006) was done.

Results: Five major themes were identified. They were "Mandatory component to complete undergraduate degree, enhance professional development, Personal satisfaction, Obstacles and Importance of introducing awareness". Since the research project is highly affected to the GPA and without the research project, the degree cannot be completed. Under the theme of enhance professional development, students indicated their opinions on the subject of practical skills as a nurse, nursing education and nursing management such as providing quality patient care, updating nursing procedures and service quality management. Moreover, they emphasized that conducting and publishing research added a qualification, satisfaction and reputation to their carrier. Also, they emphasized problems they encounter when conducting the research projects, publishing and utilizing their findings such as funding, lack of awareness and support from clinical setting for data collection, lack of awareness among the students regarding research methods, publication and promotion opportunities.

Conclusions: Ideas for the enhancement of nursing profession in Sri Lanka such as clinical practices, nursing education and the administration of the nursing field were emerged. Negative aspects to hold the nursing research in the country and suggestions to reduce the barriers for continuing the research study ahead. This information is useful for the enhancement of evidence-based practice for nursing profession in Sri Lanka to take more initiatives in future.

Keywords: *Nursing undergraduates, Perception, Research*

Students' Exposure and Perception of Blended Learning Approaches in the Post COVID-19 Higher Education System

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Background: The COVID-19 pandemic necessitated a shift in higher education towards blended learning, combining online and in-person instruction. Blended learning offers flexibility, personalized experiences, and technological integration. Understanding students' perceptions of this approach is crucial for optimizing learning outcomes and student satisfaction in the post-COVID higher education system.

Objectives: To assess the correlation between students' exposure and perception of blended learning approaches in the post-COVID higher education system

Methods: A descriptive, cross-sectional study was conducted among private and state university students in the Western Province. A self-administered questionnaire adapted from a modified version of the Web-based Learning Environment Instrument (WEBLEI) was distributed among the participants to assess their perceptions of blended learning. The data acquired under the WEBLEI scales (Access, Interaction, Response and Results) were analyzed using SPSS version 26.0 to interpret significant correlations between exposure, evaluated quantitatively by the Access-Interaction scales and perception, evaluated quantitatively by the Response-Results scales of the modified WEBLEI. Significant correlations were identified using a cut-off $p < 0.05$.

Results: A total of 322 students participated in the study, with a response rate of 97.2%, and majority of the respondents were females (80.5%). The mean(\pm SD) of 3.45(\pm 0.74), 3.67(\pm 0.638), 3.39(\pm 0.61), and 3.66(\pm 0.65) were obtained for the Access, Interaction, Response, and Results scales respectively. In terms of access, 54% of students agreed on the feasibility and availability of online material in suitable locations, with 51% affirming flexibility in time management. The requirement for self-discipline and autonomy for inquiries was strongly supported by the Interaction scale with mean(\pm SD) 4.01(\pm 0.92) and 3.86(\pm 0.96) respectively. Response scale expressed satisfaction with the learning environment, but 33.2% had concerns about substituting on-campus classes and 31.6% with potential boredom. For the Results scale, students generally agreed on content clarity and its connection to campus courses with 39% disagreeing upon substituting printed references to online resources. The study revealed a positive perception towards blended learning (mean \pm SD; 3.559 \pm 0.62). Pearson correlation suggest a strong positive association ($r=0.673$) between students' exposure to blended learning and their perception, statistically significant at 0.01 level ($p \leq 0.000$).

Conclusions: The study indicated a robust relationship between students' exposure and their positive perception of blended learning, with high agreement on convenient access and positive interactions to meet student satisfaction with minor concerns. These findings emphasize the need to address these challenges and enhance the design of blended learning approaches in higher education.

Keywords: *Blended learning, Higher education, Perception, Post-COVID, Student well-being*

In-vitro* Antimicrobial Activity of *Cinnamomum cassia* against Pathogenic *Staphylococcus aureus

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Background: *Cinnamomum cassia* (Davul kurundu) is a commonly used plant in Ayurvedic medicine in Sri Lanka, for the treatment of many diseases. However, the therapeutic potential for treating bacterial and fungal infections has not been scientifically proven.

Objective: To determine the antibacterial activity of the methanol extracts of *Cinnamomum cassia* leaves and bark against pathogenic *Staphylococcus aureus* (ATCC25923)

Methods: Agar well diffusion assay was used in the study against *S. aureus*. The selected plant was authenticated from the Botany Division, Bandaranayake Memorial Ayurvedic Research Institute, Nawinna, Maharagama (Acc No 4602). Plant extractions were prepared by using methanol in maceration method into the 1:3 ratio. Each extract's mean zone of inhibition (ZOI) was determined after incubating the agar plates for 24 hours at 37 °C. The potency of each extract was validated against positive control gentamicin (10µg/mL) and negative control dimethyl sulfoxide (50%). Then Minimum Inhibitory concentration (MIC) was determined by macro broth dilution method and Minimum Bactericidal concentration (MBC) was determined by subculturing on blood agar.

Results: The mean(±SD) ZOI of the concentrations 500mg/mL, 250mg/mL, and 125mg/mL of *C. cassia* bark extract were measured as 24.15(±0.15) mm, 20.5(±0.20) mm, 18.35(±0.35) mm, respectively. The mean ZOI with the concentrations of 500mg/mL, 250mg/mL, and 125mg/mL of *C. cassia* leaf extract were measured as 21.5(±0.50) mm, 18.15(±0.15) mm, 16.35(±0.35) mm, respectively. Mean ZOI of the positive control was 29.01(±1.18) mm. MIC values of *C. cassia* bark extract and *C. cassia* leaf extract were 7.81mg/mL and 62.5mg/mL. MBC values of *C. cassia* bark extract and *C. cassia* leaf extract were 15.63mg/mL and 125mg/mL.

Conclusions: The study showed that the methanol extracts of *C. cassia* leaves and bark can be used to treat *S. aureus* infections. Out of the two extracts, *C. cassia* bark extract showed the highest ZOI and lowest MIC and MBC values. Therefore *C. cassia* bark extract can be recommended as an effective antibacterial agent against *S. aureus*.

Keywords: Antibacterial, *Cinnamomum cassia*, Minimum inhibitory concentration, *Staphylococcus aureus*, Zone of inhibition

Assessment of the Knowledge on Daily Water Requirement and Dehydration among the Pregnant Women in Selected MOH Areas in Galle District

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Background: Water is the most essential component for all living organisms to survive. Pregnant women are at a high risk of dehydration, and they are reported to have inadequate fluid intakes. Pregnancy increases women's weight and energy intake due to their special physical status. This causes a proportional increase in water intake.

Objective: To assess the knowledge on the daily water requirement and dehydration among the pregnant women in selected Medical Officer of Health (MOH) areas in Galle district

Methods: A cross-sectional study was conducted on a conveniently selected sample of 366 pregnant women recruited from Galle, Bope-poddala, and Akmeemana MOH areas (n=122 from each MOH area). A pre-tested, self-administered questionnaire was used to assess the knowledge about daily water requirements and dehydration. Marks were given to each question in the questionnaire, and knowledge scores were categorized according to the given marks (>90% - excellent knowledge, 90-75% - good, 75-50 - average, and <50% - poor). Data were analysed using descriptive and inferential statistics using SPSS version 25.0.

Results: Majority of the participants, (n=193, 52.7%), were in the 18-30 years age range. Majority were Sinhalese (n=327, 89.3%) and Buddhist (n=316, 86.3%). About 56% of the pregnant women were from rural areas. Of the 366 participants, 39.9% have been educated up to GCE Advanced Level. However, all the participants (n=366, 100%) had a poor knowledge on daily water requirement. The mean(\pm SD) knowledge score was 15.57(5.14) for the knowledge on daily water requirement. All of them (100%) had a poor knowledge regarding dehydration as well. The mean(\pm SD) knowledge score was 16.87(\pm 5.57) for the knowledge on dehydration. The total knowledge score of the pregnant mothers were significantly different with respect to their residence, educational level, and monthly income ($p=0.001$, $p<0.001$ and $p<0.001$, respectively).

Conclusions: Knowledge on daily water requirement, and dehydration among pregnant mothers is poor. Findings emphasize the urgent requirement of improving the knowledge of pregnant women on daily water requirement, proper hydration, and the consequences of dehydration.

Keywords: Dehydration, Daily fluid intake, Knowledge, Pregnant women, Water requirement

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***In-vitro* α -Amylase Inhibitory Activity of *Evolvulus alsinoides* (L.) L. Extracts**

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Background: *Evolvulus alsinoides* (L.) L. commonly known as ‘Nil Vishnukranthi’ is known for its dietary enzyme inhibitory activity. It is a widely used medicinal herb in ayurvedic preparations, and reported to be effective against neurodegeneration, gastroprotection and diabetes. The quantitative analysis of the plant phytoconstituents has reported the presence of alkaloids, polyphenols, saponins, tannins and flavonoids and aqueous extract possessed significant antacid potential.

Objectives: To evaluate α -amylase enzyme inhibition of aqueous (AqE), ethanolic (EE) and hexane (HE) extracts of *E. alsinoides*

Methods: AqE, EE and HE were obtained by reflux method using dried whole plant powder. Solutions of 100 mg/mL preliminary screening concentrations were prepared by dissolving concentrated *E. alsinoides* extracts in sodium acetate buffer separately. In a microplate, samples with 40 μ L of the 0.1% starch solution and 120 μ L of *E. alsinoides* extract (n=3) were pre-incubated at 37°C for 10 minutes. To each well, 40 μ L of 500 μ g/mL α -amylase enzyme (from bacterial source) was added and incubated at 37°C for 10 minutes. A volume of 100 μ L di-nitrosalysilic acid (DNS) reagent was added to the reaction mixture and heated in a water bath at 90°C. The absorbance was measured at 540nm. A blank with starch replaced by buffer and a control with plant extract replaced by buffer were carried out. Acarbose was used as the standard. Statistical analysis was carried out with one-way ANOVA using SPSS.

Results: AqE, EE and HE extracts of *E. alsinoides* exhibited percentage inhibitions of 62.35(\pm 6.1)%, 17.66(\pm 8.7)%, 76.71(\pm 1.8)%, respectively. The standard (Acarbose) exhibited 50% inhibition at 140.62(\pm 2.4) μ g/mL concentration.

Conclusions: Aqueous and hexane extracts of *E. alsinoides* possessed significant ($p < 0.001$) amylase enzyme inhibitory activity compared to deionized water. However, ethanolic extract did not exhibit significant activity ($p < 0.05$).

Keywords: α -Amylase inhibitory activity, Antidiabetic, *Evolvulus alsinoides*

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Assessment of Knowledge, Attitude and Practices on Self-medication with Over-the-counter Medicines among Pregnant Women in Colombo, Sri Lanka

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Background: Self-medication during pregnancy is a crucial topic to discuss due to its effects on both the mother and the fetus. Most of the pregnant women rely on over-the-counter (OTC) medicines for self-medication regarding pregnancy-related conditions. However, published data on self-medication among pregnant women in Sri Lanka is scarce.

Objective: To assess the knowledge, attitudes, and practices regarding self-medication with OTC medicines

Methods: A descriptive cross-sectional study was conducted among pregnant women attending maternity clinics in six Medical Officer of Health (MOH) areas in Colombo, Sri Lanka. Data were collected from 399 participants (selected through a simple random sampling method), using a self-administered questionnaire. Statistical analysis was performed using SPSS version 27.0.

Results: Among respondents, 63.4% were in the age group of 20-30 years, and 38.3% were Tamil. Moreover, 6.8% used self-medication and iron supplements were the most self-medicated (74.4%) by the participants. The mean(\pm SD) score for knowledge was 4.38(\pm 0.873), and for attitude and practice, those were 27.56(\pm 3.752) and 20.35(\pm 4.325), respectively. Participants' practices were significantly associated with ethnicity, educational level, and gestational stage ($p=0.036$, $p\leq 0.001$, $p\leq 0.001$), respectively. Significant and positive linear correlations were observed between knowledge and attitude ($r=0.375$, $p<0.001$), attitude and practice ($r=0.518$, $p<0.001$), and knowledge and practice ($r=0.224$, $p<0.001$). However, the majority of the participants 87% had misconceptions that antibiotics can be used at any stage of pregnancy, and 93% believed that they can use any medicine at any stage of pregnancy. Additionally, most participants (96%) believed they can use old prescriptions to purchase medicines during pregnancy.

Conclusions: The study elucidates a higher level of knowledge among participants regarding self-medication during pregnancy. However, there is a need for improvements in attitudes and practices on the same aspect. Targeted awareness campaigns should focus on ensuring safer self-medication practices.

Keywords: Knowledge, Over-the-counter medicines, Pregnant women, Self-medication, Sri Lanka

Acknowledgment: KIU undergraduate research grant

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Impact of an Educational Video on Knowledge and Attitudes on Snakebite among Community in the Viharagama Grama Niladhari Division, Kandy, Sri Lanka

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Background: Snakebite is a neglected tropical illness that primarily affects the rural areas of tropical countries followed by thousands of deaths and associated costs.

Objective: To assess the impact of an educational video on knowledge and attitudes about snakebite among the community in Viharagama Grama Niladhari division, Kandy district in Sri Lanka

Methods: A quasi-experimental study was conducted in 134 households (HHs) in Viharagama Grama Niladhari division in Sri Lanka using systematic random sampling method. A content and face validated, pretested self-administered questionnaire was used to collect data. A voice doubled video on first aid treatment, antivenom therapy for snakebites, and snake identification was used as an educational intervention. In the first part of the questionnaire, a correct answer was given with one score and an incorrect answer was given with a zero score. For the 24 questions; we considered respondents as “good” if they scored >18, “fair” if they scored 13-18, and “poor” if they scored <12. In the second part, one score was given for each reported positive attitude in the 10 questions. Pre intervention and post intervention data on knowledge and attitudes were analysed using SPSS version 25.0.

Results: A total of 369 participants from 134 HHs were included in the study. The majority of participants were females (59.1%, n=218) and age ranged from 18-30 years (43.4%, n=160). The study sample showed a statistically significant improvement ($p<0.001$) in the knowledge at the post intervention (98.9%) compared to the pre-intervention (28.2 %). Participants in the study showed a statistically significant improvement in their attitudes ($p<0.001$), with a mean score of 7.7 at pre-intervention and a mean score of 9.4 at post-intervention.

Conclusions: An educational video can be used to improve knowledge and attitude on first aid treatment, antivenom therapy for snakebites, and snake identification among the community.

Keywords: *Antivenom therapy, Attitudes, First-aid, Knowledge, Snakebites*

Stress, Anxiety and Depression among Nurses in the Time of COVID-19

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Background: During the COVID-19 pandemic, healthcare system was overwhelmed leading to a great psychological pressure on nurses in the care of critically ill patients with COVID-19. Therefore, psychological well-being of nurses who provide care during the COVID-19 pandemic becomes an important issue that needs to be addressed.

Objectives: To evaluate the level of stress, anxiety, and depression among nurses working at Coronary Care Unit (CCU) of National Hospital of Sri Lanka (NHSL) during the COVID-19 pandemic

Methods: In this descriptive cross-sectional study, data were collected from the entire population as a sample (n=133) and excluded nurses who were pregnant and on leave (due to illness, maternity leave, quarantine, or lockdown) during that period. A self-administered questionnaire consisting of six sections was used to collect data on socio-demographic factors, anxiety and depression levels, work environment, interpersonal relations, and feelings related to COVID-19. Descriptive and inferential statistics, Chi-squared tests and Pearson correlation tests were used.

Results: Participants age ranged from 21 and 30 years and over half of the participants were female. Among the participants, 41.8% were undergraduates, and 59.7% held the position of Grade III nurse. Additionally, 50.7% of the participants had one to five years of working experience. Nearly half of the participants (48.9%) experienced mild anxiety, and the majority (67.7%) reported minimal or no depressive symptoms. Those who were younger and had poor knowledge on COVID-19 disease, increase the workload and fewer years of experience of nursing affected higher level of stress, anxiety or depression.

Conclusions: Providing psychological first-aid, and preventive and primitive interventions in mental well-being for nurses is important. Findings revealed the impact of the COVID-19 pandemic on mental health among the participants. It reveals the presence of stress, anxiety, and depression among nurses during the pandemic and identifies age and average income as factors associated with these mental health issues.

Keywords: Anxiety, COVID-19, Depression, Mental Health, Nurses

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