



# 13<sup>TH</sup> INTERNATIONAL RESEARCH CONFERENCE

HOLISTIC APPROACH TO **NATIONAL GROWTH** AND **SECURITY**

15<sup>TH</sup> - 16<sup>TH</sup> OCTOBER 2020

Allied Health Sciences

ABSTRACTS



General Sir John Kotelawala Defence University



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**HOLISTIC APPROACH TO NATIONAL GROWTH AND SECURITY**

**ALLIED HEALTH SCIENCES**

# **ABSTRACTS**



**General Sir John Kotelawala Defence University**  
**Ratmalana, Sri Lanka**

This book contains the abstracts of papers presented at the Basic and Applied Sciences Sessions of the 13<sup>th</sup> International Research Conference of General Sir John Kotelawala Defence University, Ratmalana, Sri Lanka held on 15<sup>th</sup> and 16<sup>th</sup> of October 2020. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form, without prior permission of General Sir John Kotelawala Defence University, Ratmalana, Sri Lanka.

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## Message from the Hon. Minister of Education



It gives me immense pleasure to send this message on the occasion of the 13th International Research Conference of the General Sir John Kotelawala Defence University (KDU). I would like to congratulate the KDU for being able to conduct its International Research Conference in 2020, consecutively for the 13th time. It is not an easy task to organize such a momentous event particularly under many difficulties and challenges posed by the COVID 19 pandemic situation. It is gratifying to witness that KDU, the only Defence University in the country, has been able to transform a challenge into an opportunity, as it usually does.

The theme of the conference, namely the “Holistic Approach to National Growth and Security,” is very timely and of great significance for deliberation in expert panels of this conference. The nexus between National Growth and National Security is closely interwoven. The ‘development’ and ‘security’ of a country cannot be compartmentalized and discussed in isolation of each other. There is no security for a nation without economic and social progress, and likewise, economic and social progress cannot be achieved without stability and a secure environment. I hope various panels of this conference will be able to discuss many facets of national growth and security and their interconnectedness. These two areas have a direct bearing on the development of Sri Lanka, a country which succeeded in ending a 30-year long separatist war. In the context of the present need for robust development, it is absolutely necessary to engage in serious research which leads to discoveries as well as policy-oriented recommendations. Therefore, all academic establishments must provide a conducive space for their intellectuals to reach new frontiers in research. I am glad that KDU is setting an example for all other universities in Sri Lanka in this regard. I hope this year’s conference will produce significant research outcomes and I wish this conference all the success.

**Hon. Professor GL Peiris,**  
Minister of Education

## Message from the Secretary, Ministry of Defence



I am delighted to send the best wishes to the KDU on this significant occasion of the annual international research conference. I would also like to congratulate the Vice-Chancellor and the team for continuing the tradition of organizing this conference consecutively for the 13th time, despite the emerging contested health environment.

This year's conference theme: "Holistic Approach to National Growth and Security" focuses on the National Growth and National Security as core concepts, and it, further, suggests that 'development' and 'security' of a country should always go hand in hand. Therefore, this conference would undoubtedly become a vital forum to discuss an area of study which has a direct bearing on the development interests of our motherland.

I am glad that KDU, under our ministerial guidance, is setting an example for all other universities in Sri Lanka in progressing research in many academic fields. I hope this year's conference will produce a significant research outcome that the policy community of Sri Lanka could utilize to support the present development drive. Further, I would like to urge the conference organizers to see the possibility of distributing the conference outcome to all the relevant Ministries and Departments of the country so that these entities could link with the researchers and employ their valuable research outcomes for the benefit of the nation.

I wish that KDU IRC 2020 will enhance the wisdom of all the participants to serve Mother Lanka for a better tomorrow.

**Major General (Retd) GDH Kamal Gunaratne**

WWV RWP RSP USP ndc psc MPhil  
Secretary - Ministry of Defence

## Message from the Vice-Chancellor



The International Research Conference taking place for the 13th consecutive time is a landmark in terms of keeping continuity of events at KDU. This year's conference attracted a large number of paper submissions and it indicates the enthusiasm growing in the country on development and security research.

KDU, from its inception, was instrumental in handing down the core values of security to the development paradigm in Sri Lanka. This year's theme 'Holistic Approach to National Growth and Security' highlights the importance of maintaining a harmonious blend in security and development in all national projects.

I believe the efforts of security-based education aiming at strengthening national development should be more cooperative in the future and KDU has always facilitated any research efforts that strengthens the national security of our nation. We urge the academic community of Sri Lanka to join hands with us in all our future endeavours to support the nation especially through productive research in diverse disciplines.

The organizers of the KDU international research conference intend to set the tone to initiate more collaborative research at national and global levels. This research conference is an ideal platform to make connections. I hope that authors of KDU and various other local and international universities will take the opportunity to interact and develop friendly relationships, establish networks and to explore win-win situations. I wish all the very best for the presenters and hope you will enjoy every moment of this academic fusion taking place on two whole days.

### **Major General Milinda Peiris**

RWP RSP VSV USP ndc psc MPhil (Ind) PGDM

Vice Chancellor

General Sir John Kotelawala Defence University

## Message from the Conference Chair



For the thirteenth consecutive year, General Sir John Kotelawala Defence University organizes its International Research Conference (KDU IRC 2020), and this year it is held on the theme 'Holistic Approach to National Growth and Security'. It is with great pleasure and honour, the organizing committee extends its greetings to all of you taking part in KDU IRC 2020. Holding the KDU IRC 2020, under the patronage of the Vice Chancellor, amidst many challenges encountered throughout the year, was memorable experience for me, and I believe that the organizing committee was able to accomplish a very successful mission.

KDU IRC 2020 is a tremendous opportunity for researchers all over the world encompassing various disciplines such as Defence and Strategic Studies; Medicine; Engineering; Management, Social Sciences and Humanities; Law; Built Environment and Spatial Sciences; Allied Health Sciences; Basic and Applied Sciences and Computing to present their research to fellow scholars, professionals and students.

Interestingly, the theme of KDU IRC 2020 is dedicated to the national growth and security, and it reflects the prime concerns of contemporary Sri Lanka as a nation and researches based on a holistic approach towards the national growth and security would enhance the quality in all aspects in a timely manner. In this backdrop, the esteemed speakers of all plenary sessions and research presenters of all technical sessions will cater to the same objective.

Finally, I would like to extend my best wishes to all the authors, participants and the organizing committee of KDU IRC 2020, and I encourage all of you to enjoy the KDU hospitality during these two fruitful days.

**Dr. L. Pradeep Kalansooriya**

Dr-Eng, MSc, BSc, MIEEE, MCSSL  
Conference Chair

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## **PLENARY SESSION**

# **Physiological Cardiac Remodelling: an Exploration of Its Contribution Towards an Optimum Athletic Performance**

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Repetitive participation in vigorous physical exercise results in significant changes in myocardial structure and function. Cardiac enlargement and bradyarrhythmias are the most prominent cardiovascular changes seen in athletes. Although these changes have been described in the 18th century by mere clinical examination, subsequent development of radiography, electrocardiography, echocardiography and magnetic resonance imaging has led to further advances in the understanding of the athlete's heart. Our collaborative work with the Institute of Sports Medicine and the Institute of Cardiology, National Hospital of Sri Lanka on cardiovascular health of Sri Lankan elite endurance runners has proven the ability of regular training in bringing about satisfactory physiological cardiac remodelling in these sports personnel. However, a dialogue should be initiated to explore whether these changes optimally contribute to enhance the performance of these athletes. This presentation will also stimulate a discussion on the importance of monitoring the cardiovascular health of elite athletes after retirement. Although 'Athletes heart' is generally considered benign with changes reversible when training is stopped, some athletes, especially elderly athletes with a lifelong training history may experience irreversible cardiac pathologies.

**Keywords:** *Physiological Cardiac Remodelling, Optimum Athletic Performance*

# Our Strengths and Weaknesses of Education for Research and Innovation and Sustainable Development

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Research, innovation and evidence-based practice is a 'motto' that we all should learn to honour. This theme is so relevant today for us in the middle of this pandemic. We have to learn from our past and look at the challenges of the future to offer realistic solutions. There is no short-cut. Work smartly, constructively, and in unity. We need to work with research evidence and not opinion. Research evidence does not come for free; it needs appropriately generated data. Data needs to be of quality to achieve the most useful evidence upon which we can depend upon. Generating quality data need good research designs. This needs trained personnel and facilities. Evidence-based solutions to our problems in the future will reduce our wastage and promote growth. To promote research, we need quality and modern education opportunities. We need to ensure our future workforce will be graduates of multiple expertise. Nearly 40% of the workforce are graduates in developed countries. Education and Health are the best investment opportunities we have. The highest-ranking universities in the world have 25-30% of international students. This not only brings money to the country but promote those universities as educators across the world. Yet, we do not even allow 1% of foreign students in our universities. We need incentives, opportunities and wider recognition for researchers for motivation. Health and Education are the biggest investment opportunities we have for investment with long-term high returns. Take, for example, Malaysia and Singapore. We were equal in GDP to them in 1948 when we received independence. Today Malaysia's GDP is 11,000 USD per capita and Singapore 65,000. Ours its merely 4000 USD. What is the secret? They have research and innovation at the forefront of what they do. KDU has invested in quality education. Now it's the time to create opportunities and assist researchers to achieve the next step, quality research on a substantial scale

**Keywords:** *Education, Research and innovation, Sustainable development*

## The Mean Glandular Dose (MGD): Japan DRLs 2020

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The mean glandular dose (MGD) is used to describe the absorbed radiation dose to the breast during mammography. Radiation dose to the breast should be kept minimum since its high radiosensitivity. Guidelines of international organizations such as the International Commission on Radiological Protection (ICRP) and International Atomic Energy Agency (IAEA) states that Diagnostic Reference Levels (DRLs) are tools for optimizing medical radiation protection in the diagnostic field. DRL values for facility are helping to review that facility and determine whether that facility is producing acceptable image at lower radiation dose. Moreover, DRLs are closely related to the quality assurance of equipment and methods. DRLs have been incorporated in various countries. In Japan, at first, various organizations, academic societies, organizations, and researchers conducted a survey on diagnostic doses and proposed standard diagnostic doses. The Japan Network for Research and Information on Medical Exposure (J-RIME) had set up a DRL working group of members assigned from each organization in August 2014 to create first DRLs in 2015. According to ICRP Publication 135, DRL must be revised at least every 3-5 years. This is necessary to drive broader optimization by implementing DRLs and to respond to changes in technical progress and clinical demands. The DRL Working Group of J-RIME set DRL for 2020 after five years from initial publication. A large-scale national survey was conducted and the results were tabulated and analyzed. DRL for mammography was published under three categories as 2.4 mGy for 40 mm PMMA phantom, 1.4 mGy for 2D mammography based on clinical data and 1.5 mGy for DBT based on the clinical data. 95<sup>th</sup> percentile has been used for phantom data while 75<sup>th</sup> percentile was used for clinical data in order to establish Japan DRLs, 2020. The optimization at each institution is expected to be promoted using these new DRLs.

**Keywords:** *Mammography, Radiation, Mean Glandular Dose*

# Impact of Clinical Pharmacy Services on Optimising Medicines Management: Making It a Reality in Sri Lanka

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Medicines significantly contribute to maintain optimal health, prevent illness and cure diseases and should be judiciously prescribed to achieve the intended therapeutic goals to improve quality of life. Medicines-related harms increase patients' morbidity and mortality and impact the health budget. Evidence generated from low and middle income countries (LMIC) shows that there is an urgent need to improve the optimal use of medicines since inappropriate use has led to number of adverse health events. Therefore, a system should be introduced to support patients to get the best possible outcomes from their medicines. Medicines optimisation is a patient-centred approach to safe and effective use of medicines and ensures that the right patients get the right choice of medicine at the right time. Clinical pharmacists are a key member of the multidisciplinary team and play a pivotal role in medicines optimisation. Based on their sound knowledge of medications and clinical competencies gained through structured training program, clinical pharmacists perform a full range of medication decision-making functions. However, clinical pharmacy services are not part of the Sri Lankan public hospital system, although studies over the last 10 years in Sri Lanka as a result of the Collaboration of Australian and Sri Lankan Pharmacists for Practice, Education and Research (CASPPER) have demonstrated the impact of clinical pharmacists in medicines optimisation and better patient outcomes, reduced drug related problems including hospital re-admission and resulted in reductions in health expenditure. A few private hospitals in Sri Lanka are practicing clinical pharmacy services based on evidence generated from both Sri Lanka and other countries. Authorities now need to explore evidence generated from studies in Sri Lanka and make clinical pharmacy services an integral part of government health settings.

**Keywords:** *Clinical Pharmacy Services, Medicines Management*







## **ORAL PRESENTATIONS**

# Multiple Intelligence and Academic Performance among BSc. Nursing Undergraduates in Kotelawala Defence University, Sri Lanka: a Correlational Study

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Multiple Intelligence (MI) is a major determinant of academic performance among undergraduates. A descriptive correlational study was conducted to assess the types of MIs and to determine the correlation between MI and academic performance among BSc. Nursing Undergraduates of four academic years in Kotelawala Defence University. The McKenzie's MI Inventory was used to assess the types of MI while the Semester Grade Point Average (SGPA) was used as the measure of academic performance. The Pearson Correlation was used to evaluate the correlation between MI and academic performance, and one-way ANOVA was used to assess the mean differences of MI among batches. The response rate of the participants was 69.6% (n=126), and the mean ( $\pm$ SD) age of the participants was 23.65 ( $\pm$ 3.82) years. When considering the mean ( $\pm$ SD) values of MI, Interpersonal Intelligence scored the highest ( $7.94 \pm 2.24$ ), and Verbal Intelligence scored the lowest ( $6.51 \pm 2.23$ ). Naturalistic ( $p=0.000$ ), Musical ( $p=0.041$ ), Existential ( $p=0.026$ ) and Visual ( $p=0.022$ ) intelligences had significant mean differences among the four batches. There was no significant correlation between SGPA and types of MIs among first- and second-year undergraduates. However, SGPA of third-year undergraduates had a significant positive correlation with Interpersonal intelligence ( $p=0.045$ ,  $r=0.422$ ) and significant negative correlation with Intrapersonal Intelligence ( $p=0.018$ ,  $r=-0.488$ ). Further, SGPA of fourth-year undergraduates had a significant positive correlation with Naturalistic ( $p=0.041$ ,  $r=0.404$ ) and Existential ( $p=0.008$ ,  $r=0.512$ ) intelligences. It was recommended to make nursing undergraduates aware of their MIs and do necessary changes in the nursing curricula and to evaluate its effectiveness in future research.

**Keywords:** Multiple Intelligence, Academic Performance, Nursing Undergraduates

# Quantitative Analysis of the Additional Radiation Burden due to Electronic Collimation in Digital Radiography

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In recent years, the conventional film-screen radiography technique is replaced with the novel invention of digital radiography. This digital technology provides prompt image readout with reduced radiation exposure. The image can be post processed to adjust the spatial resolution and contrast. However, the inappropriate use of the background masking tool during post processing degrades the outcomes of digital technology. Although this tool is intended to eliminate the ambient light around an image to improve the quality of the displayed image, contrarily it is used as a substitute for insufficient pre-exposure collimation of the irradiated field resulting in unnecessary overexposure. The present study aimed at evaluating additional radiation dose due to electronic cropping in digital radiography facility for the first time in Sri Lanka. A sample of 194 X-ray images under nine different projections was evaluated, and the average areas of pre and post-exposure collimation were measured. The difference of the mean areas was calculated and presented as a percentage of the area of the whole radiation field. The percentage of overexposed area due to improper collimation was found to be over 50% in cervical spine, shoulder and sinus projections (in 44.4% of study sample). The lateral projection of cervical spine showed the highest overexposed percentage (55%). Therefore, it is within the scope of practice of a radiologic technologist to use appropriate pre-exposure collimation. The electronic masking should be only utilized to eliminate the interfering brightness in the image and the technologists should be clinically competent to adopt the above concept.

**Keywords:** *Electronic collimation, Digital Radiography, Background masking, Radiation exposure.*

## Parenting-Related Stress in Mothers of Toddlers (1-3 Years) at Piliyandala MoH Area

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Parents of toddlers are at risk of increased parenting-related stress as toddlerhood is considered as a period with challenging behaviours due to significant physical and emotional development of the child. This descriptive cross-sectional study aims to examine the parenting-related stress levels and identify the factors affecting stress in mothers of toddlers (n=423) registered at Child Welfare Clinics of Piliyandala MOH area. The validated version of the Parental Stress Scale (PSS) was used as the data collection tool and a systematic random sampling technique was used. A Chi-square test was used to assess the associations between categorical variables. The mean age of the mothers was 30.62 ( $\pm 4.77$ ) years and 29.8% (n = 126) were employed. According to the subscales of PSS, the mean score of the Parental Stress (PS) subscale of mothers was 28.72 (Scale; 15- 49) and 51.3% (n=217) were reported with a higher level of stress. The mean of Lack of Parental Satisfaction (LPS) subscale was 11.30 (Scale; 8-23) and nearly 40% (n=170) were reported with a higher LPS score which is above the mean. Further, parental stress was significantly associated when the age of the toddler is between 1-2 years (p = 0.03), having more than one child (p = 0.00), the toddler is being in the second or higher ordinal position (p = 0.02), unemployed mothers (p = 0.00) husband educated up to O/L or less (p = 0.02), temporary residence (p = 0.03) and husband being alcoholic (p = 0.01). In conclusion, the majority of the mothers of toddlers showed a higher level of parental stress and a considerable percentage lacks parental satisfaction.

**Keywords:** Parenting, stress level, mothers of toddlers

# Occupational Engagement in Prisons: an Evaluation of Time-Use in Sri Lankan Correctional Settings

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Sri Lankan prison system has shown marked overcrowding for decades. It is a common issue worldwide which contributes to poor care, loss of privacy, limited resources and occupational deprivation. A lack of access to basic human occupations can lead to occupational deprivation. In penal settings, occupational deprivation has been suggested as a contributing factor in prison riots, prison suicides, recidivism, episodic disorientation and psychosis among inmates. Therefore, it is important to observe the current Sri Lankan prison system concerning the occupational deprivation among prison inmates. A cross-sectional descriptive study was carried out in Welikada prison (male section) situated in Colombo 09, aiming to explore the time-use and occupational engagement among sentenced prisoners detained and to suggest suitable actions to be taken to improve the correctional process. A purposive sample of 30 inmates between 18 and 55 years old was selected for the study. Data was collected via an informal semi-structured interview based on an occupational questionnaire (Smith et al., 1986) and analyzed using qualitative and quantitative methods. An overall time-use in a typical day among participants was evaluated using simple statistical methods under five domains; work, daily living works, recreation, leisure and sleep. Qualitative data summarized under three main themes; occupational choice and autonomy, motivation for occupation and values of occupation. The overall findings suggest that the incarcerated environment promotes occupational imbalance, passivity and negativism, which shows occupational deprivation among the prison population. The findings are suggestive of a need for an occupational therapy intervention to the prison institutions at large or on an individual and group basis.

**Keywords:** *Penal settings, Occupational therapy, Engagement, Time use, Correctional settings*

## Estimation of Radiation Dose to the Eye during Radiopharmaceutical Preparation and Scan Procedures at a Selected Private Hospital in Sri Lanka

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Radiopharmaceuticals are radioactive compounds used in nuclear imaging procedures. The purpose of this study was to estimate the average equivalent dose to the eye. This study was conducted at the Nuclear Medicine Department of Lanka hospitals PLC, Sri Lanka. A total number of 137 procedures were selected: bone, renal (DTPA - Diethylenetriamine pentaacetic acid) and whole body iodine (WBI), and dose was measured during the radiopharmaceutical preparation. Measurement of eye dose need to be done using H<sub>p</sub>(3) type dosimeter, but due to unavailability of that dosimeter, H<sub>p</sub>(10) type electronic pocket dosimeter was used for measurements. The dosimeter (Brand-POLIMASTER and model-PM1610) was placed in between the eyes during the dose measurement with the help of a custom made head band. The highest estimated average equivalent eye dose of 6.93 ( $\pm$  5.36)  $\mu$ Sv was received by the technician during the 1<sup>st</sup> week from newly installed radio nuclide generator. Annual estimated equivalent eye dose received by personnel involved in dose administration, and patient handling were 0.34 ( $\pm$  0.24) mSvy<sup>-1</sup> and 0.08 ( $\pm$  0.01) mSvy<sup>-1</sup> respectively. A strong positive correlation ( $r=1.0000$ ) was found between total equivalent eye dose and eye dose received by the technician during radiolabeling. Further, the total equivalent eye dose during DTPA procedures and the dose received by the eye during DTPA dose withdrawal (preparation of dose vials for each patient from total dose volume) have shown a positive correlation ( $r=0.9980$ ). This study concluded that the estimated annual radiation dose to the eye of personnel involved in dose administration and patient handling were far below the ICRP recommended equivalent dose limits.

**Keywords:** radiopharmaceutical, eye dose, equivalent dose

# Prevalence of Forward Head Posture and Its Relationship with Neck Pain among Sewing Machine Operators in Two Selected Garment Factories in Kaluthara District

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Neck pain is one of the most common musculoskeletal symptoms among sewing machine operators. Sewing machine operation which is carried out in a forward inclined position over prolonged period makes them liable to develop faulty postures like forward head posture (FHP) and the occurrence of neck pain. The objective of this study was to determine the prevalence of FHP among sewing machine operators in two selected garment factories in Kalutara district and to study the association of craniovertebral angle (CVA) with neck pain intensity among sewing machine operators. A cross-sectional study was carried out with a total of 167 sewing machine operators (156 females, 11 males) who worked in the sitting position. An interviewer administered questionnaire including numerical pain rating scale was used to assess the neck pain while photogrammetry was used to measure the CVA using KINOVEA app which is a motion analysis software. The mean values and the SD of age, body mass index and work experience was 37.6 years  $\pm$  13.4, 23.7 kgm<sup>-2</sup>  $\pm$  4.9 and 10.0 years  $\pm$  8.7 respectively. Out of the study sample, 64.67 % of sewing machine operators presented with FHP while the prevalence of FHP among sewing machine operators with neck pain were recorded as 77.45%. The test results revealed a significant weak negative correlation between CVA and neck pain intensity ( $p= 0.036$ ,  $r= -0.208$ ). This study concluded a high prevalence of FHP among sewing machine operators and a significant weak negative correlation between CVA and neck pain intensity.

**Keywords:** *Forward head posture, Neck pain, Sewing machine operators*



## **Prevalence of Urinary Incontinence and Its Association with Risk Factors in Three Months Postpartum Women attending MOH Clinics registered under Colombo Municipal Council during September and October 2019**

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Urinary incontinence (UI) is a common symptom after pregnancy causing distress and embarrassment among women, and it is often under reported due to misbeliefs, lack of awareness and shame. This study is aimed to determine the prevalence and risk factors of UI among three months postpartum women attending maternity and child healthcare centres registered under the Colombo Municipal Council. A descriptive cross-sectional study was carried out among three months postpartum women of age 18 - 45 who were recruited consecutively until the sample size of 420 was achieved. A questionnaire including demographic data and obstetric history was given, and the "Questionnaire for Urinary Incontinence Diagnosis" (QUID) was given to diagnose the type of UI. The prevalence of UI out of the 420 participants was identified as 17.4%, stress urinary incontinence (SUI) as 6.0%, urge urinary incontinence (UUI) as 7.9% and mixed urinary incontinence (MUI) as 3.6%. The results of the multinomial logistic regression test revealed that parity ( $p=0.002$ ), first birth ( $p=0.014$ ) and episiotomy ( $p=0.004$ ) had a significant association with UI whereas head circumference ( $p=0.016$ ), parity ( $p=0.053$ ) and first birth ( $p=0.023$ ) had a significant association with SUI. Parity ( $p=0.002$ ) and the number of normal vaginal deliveries ( $p=0.034$ ) had a significant association with UUI while BMI ( $p=0.027$ ), first birth ( $p=0.016$ ), episiotomy ( $p=0.047$ ) and gestational DM ( $p=0.030$ ) had a significant association with MUI. The prevalence of UI among three months postpartum women was 17.4% and UUI was the most prevalent. Parity, first birth and episiotomy were the risk factors that had a significant association with UI.

**Keywords:** *Prevalence, Urinary incontinence, Risk factors*

## Antimicrobial Susceptibility Patterns of Blood Culture Isolates from Cancer Patients after Anti-Cancer Therapy.

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Blood Stream Infections (BSI) have a major impact on cancer patients. Antimicrobial patterns in pathogens should be analysed by routine surveillance since they vary among different healthcare facilities and geographical areas. This study focuses on epidemiology, clinical features, and antimicrobial profiles of cancer patients with BSI after anticancer therapy. A Descriptive cross-sectional study was conducted within a period of 4 months. The causative agents and antibiotic profiles were studied according to Clinical Laboratory Standards Institutes (CLSI) and VITEK automated system. Antibiotic profiles of organisms and antibiotic resistance patterns were analysed in terms of frequency. The prevalence of BSI was 11.75%. Gram Negative Bacilli (GNB) were higher than Gram Positive Cocci (GPC). Among GNB the most prevalent was *Klebsiella pneumoniae* and among GPC it was, *Staphylococcus aureus*. Prevalence of Multi-Drug Resistance (MDR) was 78.8%. High resistance to Erythromycin was seen in patients with haematological cancers while high resistance to Benzyl penicillin was seen in patients with solid cancers. Chemotherapy had no significant impact on presence of multi-drug resistance while the association between C Reactive Protein (CRP) with Absolute Neutrophil Count (ANC) and presence of fever were not significant. Among different antibiotic resistant groups, Extended Spectrum Beta Lactamases (ESBL) and Carbapenem resistances were noted. According to our study, high prevalence of antimicrobial resistance in Gram-negative isolates and emergence of MDR pathogens were alarming. Investigation of novel antibiotics, usage of combination therapy and usage according to the standard antimicrobial susceptibility testing may help to decrease or prevent the emergence of antibiotic resistance.

**Keywords:** Cancer, Blood-stream infections, Antimicrobial resistance.

# Learning Style Preferences and Academic Performance of Undergraduate Physiotherapy Students

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University level education of physiotherapy is fairly new in Sri Lanka. Hence students' satisfaction of the curriculum and learning environment has not been thoroughly studied. Different learning preferences have been reported among various undergraduate populations. Understanding of various learning preferences can be used to enhance their learning experiences. A cross-sectional study was conducted among physiotherapy undergraduates from the Department of Physiotherapy, Faculty of Allied Health Sciences, University of Peradeniya, Sri Lanka. This study aimed to; i. Identify the different learning preference among physiotherapy undergraduates, ii. Assess the variations of learning preferences according to the gender and academic year, and iii. Find out whether there is any relationship between learning preferences and academic performances. Learning preferences were assessed by Honey and Mumford's learning style questionnaire (LSQ). Academic performances were measured by semester cumulative grade point average (CGPA). Chi-square test was used to assess the association between categorical variables. Relationship between learning preferences and academic performances was measured using Pearson correlation coefficient. Eighty six undergraduates successfully responded to the questionnaire. Majority (51.2%) of the physiotherapy undergraduates preferred activist learning style. Chi-square value for the associations of learning preferences with gender ( $\chi=5.961$ ) and academic year ( $\chi=14.399$ ) were insignificant. Undergraduates who reported multiple preferred learning styles had relatively high CGPA. However, there was no significant different of mean CGPA among undergraduates with different preferred learning styles. Pragmatist learning preference strength significantly and negatively correlated with the CGPA ( $r = 0.381$ ). Encouraging pragmatists to improve their preferences to other styles and including more learning activities related to pragmatists may improve their academic performance. Teaching and learning activities with wide variety may improve the overall academic performances of undergraduates.

**Keywords:** *Learning preferences, academic performances, Physiotherapy undergraduates*

## Effect of CT Bore Size on Radiation Dose during Head CT Acquisition.

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With the development of technology, the use of CT extended beyond the diagnostic purposes and made room for complex radiotherapy treatment planning. As the traditional diagnostic CT scanners have small bore-size (typically 65–70 cm) and curved patient couch which are not suitable for virtual simulation with immobilized devices. Therefore, wide-bore CT scanners with increased bore size (80-100 cm) were introduced for radiotherapy treatment planning. These virtual simulation CT scanners are further equipped with an external patient positioning laser system, flat patient couch and specialized visualization software. Due to the unavailability of traditional CT scanner, these wide (or large)-bore CT simulators are used for routine diagnostic procedures. The main purpose of this study was to compare the patient doses delivered by a wide (LB) and small-bore (AQ1) CT scanners to ensure the safe use of wide-bore simulator for diagnostic purpose. A standard head CT phantom (16 cm diameter and 15 cm length) made out of Polymethyl methacrylate (PMMA) was positioned at the isocentre and 100 cm pencil ionizing chamber was positioned at the centre and periphery of the phantom. The phantom was scanned under different combinations of tube voltages (80, 100, 120, 135 kVp) and tube currents (100, 150, 200, 300, 400 mA) and the Dose Length Product (DLP) in cGy were measured for each location of the ion chamber using an electrometer. The pitch and scan lengths (0.813, 15 cm) were kept constant for each measurement. Our study confirmed that the wide-bore is delivering considerably more dose than observed in AQ1 for head CT with the same exposure parameters. This increment is more pronounced in exposures above 200 mA and 120 kVp. Therefore, the use of wide-bore simulator for routine diagnostic CT examinations is safer for lower kVp and mA but it is not encouraged for all the routine diagnostic purpose without further study.

**Keywords:** *Computed Tomography, Wide bore CT, CT dose, CT simulator, Gantry size*

## Gastroprotective Activity of Vishnukranthi Chewable Granular Dosage Form Formulated using *Evolvulus alsinoides* and Its Accelerated Stability Studies

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This study investigates the *in vitro* gastroprotective activity of Vishnukranthi chewable granules formulated using dry plant powder of *Evolvulus alsinoides* by evaluating neutralizing capacity in artificial gastric juice and the titration method using Fordtran's model. Accelerated stability studies were conducted up to three months to access the stability of granules. Each parameter was accessed on day one, then after one month, and after three months. Particle size distribution, moisture content, and pH were measured as physical stability parameters. Microbial stability is accessed by total viable bacteria and total viable fungi counts. The stability of the gastroprotective activity was evaluated using neutralizing capacity in artificial gastric juice and the titration method using Fordtran's model. Chewable granules have demonstrated a significant ( $p < 0.01$ ) neutralizing capacity on artificial gastric acid (mean pH  $1.71 \pm 0.01$ ) when compared with a negative control. The titration conducted using Fordtran's model consumed  $0.1493 \pm 0.0036$  of  $H^+$  ( $p < 0.001$ ). There was a significant difference between fine percentage, percentage of weight loss, total viable count of granules on day 1 and after 1 month and 3 months ( $p < 0.05$ ). There were no significant differences between pH values,  $R_f$  values, and the gastroprotective activity of granules on day 1 and after 1 month and 3 months. Granules were chemically stable though physically and microbiologically less stable. In conclusion, granules have demonstrated significant gastroprotective activity in both models. Further studies are recommended to improve the physical and microbial stability of the dosage form by adding a suitable binding agent and an appropriate preservative. Further, it is important to evaluate the efficacy of Vishnukranthi chewable granules clinically because this product has much potential to commercialize as a herbal remedy for gastritis.

**Keywords:** *Evolvulus alsinoides*, gastroprotective activity, Fordtran's model, Accelerated stability studies, Vishnukranthi

# **Comparative Study of Range of Motion after Conventional Physiotherapy in Adhesive Capsulitis of Shoulder Joint among Diabetic and Non-Diabetic Patients at Teaching Hospital Batticaloa**

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Adhesive capsulitis (AC) of shoulder is one of the most common conditions among musculoskeletal disorders. It affects both male and female gender and some medical conditions associated with AC, especially diabetes. Physiotherapy is the most advocated treatment option to manage this condition conservatively. The objectives of the study were to compare the range of motion (ROM) of shoulder joint in percentage among the patients with AC associated with diabetic and nondiabetic patients who received follow-up at the teaching hospital Batticaloa after conventional physiotherapy, and to determine the associated risk factors that delay the recovery. The methodology was observational, prospective institutional based study was conducted at the Department of Physiotherapy, Teaching Hospital Batticaloa, Sri Lanka for a period of 12 weeks. Thirty two patients with primary AC were recruited to this study, out of whom 15 were diabetic (DM) and 17 were without diabetic (DM) condition. An interviewer administered questionnaire was given to the participants prior to the commencement of the physiotherapy sessions, and goniometry measurement was obtained in mean percentage in AC shoulder and contralateral side before and after the conventional physiotherapy with a standard 12-inch plastic goniometer. Data was analysed in SPSS. The results showed that the conventional physiotherapy would have an impact in improving ROM of AC shoulder both in DM and non-DM population and this trend was statistically significant at a confidence level of 95% ( $p < 0.05$ ). However, there was no statistically significant ( $p > 0.005$ ) observation identified when comparing the recovery of the ROM among DM and non-DM patients with conventional physiotherapy. There was no impact on the recovery of ROM in AC patients associated with DM when compared to non-DM population. Even though the present study is preliminary in nature, the results indicated that there is no significant improvement among patients with non-DM with compared to DM patients. Therefore, it may not advisable to do over treatment to DM patients with the intention of gaining a higher productivity in the range of motion.

**Keywords:** *Adhesive capsulitis, Frozen shoulder, Range of Motion, Diabetes, Physiotherapy*

# **A Study on the Assessment of Perceived Stress, Self-Efficacy and Associated Socio-Demographic Factors among Undergraduates in a Higher Educational Institution in Sri Lanka**

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Nearly 80% of students in higher education worldwide experience psychological stress during their University life due to imbalances in social, emotional, and physical conditions. Stress can lead to poor academic performance and underachievement among students. The present study assessed the levels of perceived stress, general self-efficacy and their association with socio-demographic factors among a selected group of undergraduates at a higher educational institute. A descriptive cross-sectional study was performed using stratified random sampling among 393 undergraduates. The data were collected through the Perceived Stress Scale (PSS-10), the General Self-Efficacy Scale (GSES) and a questionnaire to collect the socio-demographic data. The data were analyzed using SPSS version 23. The mean age of the sample (n=393) was 22.36±2.33 years. The results showed a mean perceived stress score of 20.72±4.96 (moderate perceived stress). The majority of the participants (79.4%) had moderate perceived stress, followed by high stress (12.7%) and low stress (7.4%). There was no significant difference between the stress levels of male and female students (p=0.766). No significant association was observed between perceived stress and socio-demographic factors assessed (age, gender, residence status, financial status, the program of study, employment prospects) using the chi-squared test. Spearman correlation showed a significant negative association between perceived stress levels and general self-efficacy (p<0.001). Intervention strategies to develop and improve self-efficacy among undergraduates should be implemented as it affects their perceived stress levels and academic achievements which will impact their life goals. Further studies are needed to understand the stressors contributing to stress among undergraduate students.

**Keywords:** *Perceived stress, General self-efficacy, Higher education*



## Investigation of *in-vitro* Antiurolithiatic Activity of *Passiflora foetida* and *Stachytarpheta indica* on Experimentally Prepared Calcium Oxalate Crystals

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Urolithiasis or the formation of urinary stones is a major non-communicable disease that affects the urinary system. Among the different types of renal stones, calcium oxalate (CaC<sub>2</sub>O<sub>4</sub>) are overwhelming. Antiurolithiatic activity is the inhibition of formation of urinary stones. There is a high demand for herbal medicines to treat urolithiasis due to the unavailability of a successful drug devoid of complications. *Passiflora foetida* (Udahalu) & *Stachytarpheta indica* (Balunakuta) plants are used in the treatment of kidney stones in traditional medicine. This study was aimed to investigate *in-vitro* antiurolithiatic activity of these plants on experimentally prepared CaC<sub>2</sub>O<sub>4</sub> crystals. The crude plant extracts were prepared by boiling the dried plant material in water followed by evaporation of the solvents via rotary evaporation. A concentration series of aqueous extract of the plants were prepared with negative and positive (cystone tablets) controls. Antiurolithiatic activity was evaluated using the UV/visible spectrophotometry by measuring the optical density of each sample having different concentrations of the plant extracts at 620 nm. The mean absorbance of *P.foetida* extract at 0.125 mg/mL, 0.25 mg/mL, 0.5 mg/mL, 1 mg/mL, 2 mg/mL, 4 mg/mL concentrations were 0.045, 0.062, 0.105, 0.216, 0.1393, 0.623 respectively. The mean absorbance of *S. indica* extract at 0.125 mg/mL, 0.25 mg/mL, 0.5 mg/mL, 1 mg/mL, 2 mg/mL, 4 mg/mL concentrations were 0.180, 0.260, 0.201, 0.959, 0.862, 0.492 respectively. There is a concentration dependent increase in the mean absorbance for the samples. The results reveal that both extracts exhibit antiurolithiatic activity and the highest activity is exhibited by *S. indica*.

**Keywords:** Urolithiasis, calcium oxalate, *Passiflora foetida*, *Stachytarpheta indica*, antiurolithiatic activity



## ***In vitro* Evaluation of Sunscreen Activity and Phytochemical Screening of Methanolic Leaf Extract of *Magnolia figo***

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*Magnolia figo* (Local name: “*Madana-kama*”) is a native Chinese plant, which belongs to Family Magnoliaceae. Different parts of the plant have been used as a treatment for several types of disease conditions such as malaria, cardiovascular diseases and as a strengthening agent for sexual virility in traditional medicine. The aims of the present study were to evaluate the sunscreen activity and to qualitatively analyze the phytochemicals present in methanolic leaf extract of *Magnolia figo*. Collected leaves were air-dried, powdered and macerated in methanol. The filtrate was evaporated to dryness and subjected to freeze-drying process. The SPF values of methanolic extract of *Magnolia figo* and the reference agent; Dermatone® were analyzed *in vitro* by using the spectrophotometric method. The results exhibited that 2.00 mg/mL methanolic extract of *Magnolia figo* has high sun protection activity (29.94). The dose-response relationship of *Magnolia figo* and Dermatone® was analysed according to the concentration series of each, respectively. The study found that the calculated EC<sub>50</sub> of methanolic leaf extract of *Magnolia figo* (0.9135) is lower than Dermatone® (1.7820) suggesting the potency of methanolic leaf extract of *Magnolia figo* is higher than the reference agent. According to the phytochemical screening, methanolic leaf extract of *Magnolia figo* was rich in alkaloids, phenols, tannins, terpenoids, flavonoids, steroidal glycosides and saponins. The results concluded that the leaf extract of *Magnolia figo* possesses marked sunscreen activity which exhibits its potential use for the development of sunscreen formulations.

**Keywords:** *Magnolia figo*, sun screen activity, phytochemical screening

# Association between Perceived Stress and Obesity among Female Undergraduate Students in the University of Peradeniya

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Obesity has been widely recognized as a major health hazard due to the increased risk of heart disease, diabetes mellitus, and cancers. BMI is the most popular method of measuring obesity. However, waist circumference is a commonly used measure to evaluate abdominal fat distribution. In Sri Lanka, female sex is recognized to associate with overweight and obesity. Out of many well-known etiological factors, ever-increasing stress in life remains a poorly understood cause of obesity. University students are particularly subjected to stress factors and possibly have a higher incidence of becoming obese and to have high abdominal obesity. This study explores the prevalence of overweight and obesity by Body Mass Index, abdominal obesity by Waist Circumference, and explores the association between the degree of perceived stress measured by the perceived stress scale with BMI and waist circumference among female students at the University of Peradeniya. A total of 450, 3<sup>rd</sup>-year female students were selected randomly to represent all the faculties of the University of Peradeniya. The Perceived stress scale; a self-reporting questionnaire was administered. Anthropometric measurements were measured by using standardized equipment. Visceral fat was measured by the Bio Impedance analysis machine. Data were analysed using SPSS 20 software. Prevalence of overweight, obesity, and abdominal obesity was 19.9%, 4.1% and 10.1% respectively. There was a statistically significant association between perceived stress level and waist circumference categories ( $p < 0.05$ ). A similar trend was seen with BMI even though it is not significant ( $p > 0.05$ ). This study demonstrates a low prevalence of obesity among university students compared to the previously reported 7.3% of prevalence among the female population, Sri Lanka. The impact of high perceived stress was recognised as a manageable risk factor of obesity.

**Keywords:** *Obesity, Perceived stress, University students*

## Evaluation of Anti-inflammatory and Antibacterial Activities of the Extracts of Leaves, Roots and Combination of Leaves and Roots of Plant *Magnolia figo*.

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Discovery of novel drugs from medicinal plants is getting popular owing to lesser side effects and to overcome antimicrobial resistance. The methanolic extracts of both leaves and roots of *Magnolia figo* plant by cold maceration were subjected to the evaluation of anti-inflammatory and antibacterial activity. *In vitro* anti-inflammatory property was determined using heat-induced protein (egg albumin) denaturation test compared to diclofenac sodium (positive control). Concentration series of the extracts were analysed to calculate the percentage inhibition (IC<sub>50</sub>) of heat-induced protein denaturation. Antibacterial activity of the methanolic extract was determined against *Escherichia coli* (ATCC® 25922™) and *Staphylococcus aureus* (ATCC® 25923™) using the cylinder plate method using gentamycin as the positive control. The size of the inhibitory zone was compared with the positive control to determine the antibacterial activity. A lower IC 50 value (1.819 µg/mL) was shown in the combined extract of *M. figo* plant compared to the reference drug (4.337 µg/mL). It reflects the synergistic effect of the plant parts. The leaves and roots combination extract exhibited dose-dependent behavior of anti-inflammatory activity and the highest antibacterial activity against *E. coli* (zone diameter – 15 mm). However, none of the extracts exhibited antibacterial activity against *S. aureus*. Phytochemical investigations of extracts indicated the presence of alkaloids, flavonoids, phenols, tannins, saponins, terpenoids, glycosides, and steroids. Significant results elicited by the combination of plant parts confirm that *M. figo* is a medicinal plant that can be used to develop novel anti-inflammatory agents.

**Keywords:** Antibacterial activity, Anti-inflammatory activity, *Magnolia figo*

## Virulence and Genotyping of *Candida Albicans* Isolated from Oral Leukoplakia

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*Candida albicans* is the most prevalent fungal pathogen associated with some types of oral leukoplakia (OL). There are different genotypes of *C. albicans* and it exhibits a range of virulence factors that contribute to its pathogenicity. The study aimed to evaluate *C. albicans*' genotyping and their virulence factors in a cohort of Sri Lankan adults with OL. Thirty-five *C. albicans* isolated from OL lesions were evaluated, and compared with 18 oral *C. albicans* isolated from healthy individuals. The virulence factors evaluated were esterase, phospholipase, proteinase, coagulase, hemolysin production, phenotypic switching, adherence and biofilm formation. Genomic DNA were genotyped to detect A, B or C group. Out of 35 isolates from OL patients, phospholipase and proteinase activities were found in 80% and 65.71%, respectively. Esterase, hemolysin production and adherence were seen in all isolates. Coagulase activity and biofilm formation were detected in 97.14% and 77.14% of isolates, respectively. Phenotypic switching was identified in 8.6% of isolates. The expression of virulence factors in isolates from OL patients who were smokers, betel chewers and alcohol consumers were not significantly greater than in that of non-users. Out of 35 isolates, 21, 13 and 1 were genotype A, B and C, respectively. Fourteen out of 18 isolates from healthy individuals were genotype A, and 2 isolates each were genotype B and C. There was no significant genotypic difference between *C. albicans* from OL patients and the healthy controls. Further, no association was found between *C. albicans* genotypes and patients' demographic variables.

Keywords: *C. albicans*, Oral Leukoplakia, Virulence factors, Genotyping

## **Determination of Gender using Measurements of the Mandible taken from Orthopantomogram and Cephalogram**

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Determination of age is essential in forensic and medico legal practices. Most dimorphic bone of the skull is mandible. Therefore, in sex estimation, mandible plays a dominant role. Since the measurements of the mandible vary with the ethnicity, it is important to evaluate the measurements of the mandible which are important in determining gender for a Sri Lankan population. The aim of this study was to determine the gender using measurements of mandible taken from orthopantomogram and cephalogram. This prospective cross sectional study was conducted among 116 Sri Lankan Sinhala patients (female 93, male 23) who underwent both orthopantomography (OPG) and lateral cephalometric examination at National Dental Teaching Hospital, Colombo 07. Maximum and minimum ramus breadth, condylar height, projective height, ramus height, coronoid height, biogonial width were taken from the OPG image and gonial angle was taken from the lateral cephalometry using left mandible of the patient. According to the statistical analysis, mean values of maximum ramus breadth, minimum ramus breadth, condylar height, projective height, ramus height, coronoid height, biogonial width of males were higher than in females. Mean value of gonial angle of males were lower than females. Projective height was the most significant predictor in determining gender ( $P=0.000$ ). Among the sample, 67.2% predicted the gender accurately using the prediction model found in the present study. 67.7% were predicted as females and 60.9% were predicted as males accurately. In conclusion, the most reliable measurement of the mandible is the projective height in determining the gender of the Sinhala population in Sri Lanka.

**Keywords:** Gender, Mandible, Orthopantomogram, Cephalogram

## Correlation between Liver Fat Indices and Ultrasonography to determine NAFLD among Diabetic Patients

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Non-Alcoholic Fatty Liver Disease (NAFLD) and Diabetes Mellitus (mainly Type 2 Diabetes Mellitus – T2DM) strongly coexist with each other as both share common pathophysiological conditions that cause an imbalance in homeostasis. Non-invasive scores have been introduced to detect NAFLD using routine biochemical investigations and anthropometric measurements which provides simple, cost effective and patient friendly means of diagnosing fatty liver. Determination of the incidence of NAFLD patients at the Diabetic clinic, Colombo South Teaching Hospital and Association between ultrasonography based diagnosis of fatty liver with the two liver fat indices – Hepatic Steatosis index (HSI) and Fatty Liver Index (FLI) were the main objectives of this research. It was a cross-sectional analytical study conducted involving 100 newly diagnosed diabetic patients selected using exclusion and inclusion criteria. Socio- demographic data, patient history and medical history were obtained using an interviewer based questionnaire. Anthropometric measurements were collected using standard methods. Blood was collected to conduct biochemical investigations and each participant underwent an ultrasounds scan to diagnose and stage fatty liver. The data were analyzed statistically. The incidence of NAFLD among T2DM was 82%. There was a significant correlation ( $p < 0.05$ ) between Ultrasonography results of NAFLD with HSI. The study also found a highly significant correlation ( $p < 0.001$ ) between ultrasonography results of NAFLD with FLI and also showed a significant difference between the categories; No fatty liver and grade 2 fatty liver or above which makes it a suitable marker to predict the presence or absence of fatty liver in Diabetic patients.

**Keywords** – *Non-alcoholic Fatty Liver Disease, Diabetes Mellitus, Ultrasonography, Fatty Liver Index, Hepatic Steatosis Index*

## Correlation between Haemoglobin Concentration and Absolute Reticulocyte Count of Adolescent Female Iron Deficient Patients at Colombo North Teaching Hospital

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Iron deficiency can be identified as the most common micro-nutrient disorder and the cause of anemia. This occurs most frequently in children under the age of 5 years, females of childbearing age and pregnant women. Study population comprised of untreated female patients, between 15-35 years of age (n=111) with Iron deficiency due to nutritional deficiency, from Thalassemia unit, Colombo North teaching hospital. In order to generate a comparison, of the correlations in a healthy person and an Iron deficient patient, a control population (n=60) were selected according to age and gender matched patient population. The Thalassemia unit was chosen as those patients who could make a major effect on hemoglobin levels could be eliminated. Blood samples from the selected patients were collected for Full blood count analysis with Reticulocyte count and Serum Ferritin analysis. The Pearson's moment correlation of coefficient (r) of patient population (n=111); between Hb and Abs. Retic is  $r = -0.432$ , a moderate negative correlation (t-test:  $P=0.000 < 0.01$ ), between Hb and S. Ferritin  $r = 0.570$ , a strong positive correlation (t-test:  $P=0.000 < 0.01$ ), between Abs. Retic count and S. Ferritin  $r = -0.268$ , a weak negative correlation (t-test:  $P=0.000 < 0.01$ ). There were no correlations between parameters of control population. The Hb sub-group 9- 9.9 g/dL of patient population contributed to the significant strong negative correlation (t-test:  $r=-0.717$ ;  $P=0.000<0.05$ ) among all the groups. The results of our study showed that the body starts to present iron deficiency (ID) features (Microcytosis, Hypochromasia) in blood picture below Hb value 11.1 g/dL level. Although, above the 11.1 g/dL of Hb the ID features in blood picture was not prominent but there were symptoms of ID. At the Hb range 9 – 9.9 g/dL, the Abs. Retic count increased by about  $6.804 \times 10^{10}/L$  which could be identified as an attempt of compensating the bone marrow in reduction of RBC production in Iron deficiency anemia.

**Keywords:** *Iron deficiency anemia, Serum Ferritin, Absolute Reticulocyte count, Correlation, ID symptoms*



# Effect of Lidocaine Spray in the Enhancement of the Quality of Intra-Oral Periapical Radiograph when Imaging Lower Third Molar Teeth

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Dental radiography is one of the best diagnostic methods used to identify dental diseases and several dental radiographic methods are practiced in order to achieve quality images of the specific dental region. In the process of imaging lower third molar region using bisected angle technique (BAT), which is an intra-oral periapical (IOPA) radiographic method, radiographers and patients undergo a lot of difficulties. As a result of the difficulty in placing the film packet sufficiently posterior in the mouth cavity, the qualities of the radiographs are contrastively affected and patients tend to experience discomfort and pain. This study introduces an anesthetic spray, to be sprayed around the oral mucosa of lower third molar region so that the above difficulties are minimized. This applied descriptive study is carried out engaging 62 patients in two randomly selected groups as 31 in an experimental group and 31 in a controlled group. Photographs of each radiograph obtained from both the groups were analysed for quality using a quality assessment tool and each patient was given a visual analogue scale for pain assessment. Results obtained from statistical analysis showed that there was no significant difference between the qualities of radiographs obtained from conventional method and the new method. However there were significant differences between the conventional and new method when the overall opinions of the evaluators and the pain levels were analysed. This study can be considered as a useful supplementary aid in clinical practice.

**Keywords:** BAT, IOPA, anesthetic, evaluators



## **Health Promoting Lifestyle and Its Associated Factors among Undergraduate Students in Faculty of Allied Health Sciences, University of Peradeniya, Sri Lanka**

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Health promoting life style is the main strategy to improve the health status of an individual. The objective of this study was to assess the health promoting lifestyle and its determinants among undergraduate students. A descriptive cross- sectional study was conducted among 380 students in Faculty of Allied Health Sciences, University of Peradeniya. Health-promoting lifestyle was measured using Walker's health-promoting lifestyle profile II (HPLP II). The weight and height of the students were measured using an electronic weight scale and stadiometer. Data were analyzed using SPSS version 25 and 0.05 p-value was considered as the level of significance. Out of 380 students, 70.5% were females and 29.5% were males. The total mean score of HPLP II was  $120.69 \pm 16.51$ . Spiritual growth had the highest score ( $24.16 \pm 5.18$ ) in subscales and the lowest was physical activity ( $14.39 \pm 4.02$ ). Mean BMI of the students was  $21.28 \pm 3.47$ . Religion ( $p=0.024$ ), course of study ( $P=0.008$ ) and involvement in leisure activities ( $p<0.001$ ) were significantly associated with the HPLP II total score. The majority (92.4%) of them stated that they have barriers towards implementing health promoting lifestyle at the university and the lack of time was the most common barrier. Health promoting lifestyle of the students was at a moderate level and the identified barriers should be addressed to improve healthy life styles among this student population.

**Keywords:** *University Students, Health Promoting Lifestyle, Sri Lanka*

## Evaluation of Physicochemical Properties of Starch from Two Modified Sri Lankan Rice Varieties to be Used as Excipients in the Pharmaceutical Industry

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Starches are the main excipients used in the formulation of solid oral dosage forms and the majority of the excipients are imported to Sri Lanka for the country's pharmaceutical manufacturing industry. Therefore, research need to be done on finding the suitability of the available sources as pharmaceutical excipients which, in return, would be more beneficial for the country when making it self-reliant and secured in healthcare. Thus, the present study was aimed at evaluation of the physicochemical properties of rice starch isolated from two modified Sri Lankan varieties of rice, in order to facilitate their exploitation as suitable excipients for the local pharmaceutical manufacturing industry. Two Sri Lankan varieties of rice, BW 267/3 and BW 367 were subjected to experiments in the present study. Starches were isolated following the alkali extraction method used by Valgadde *et al.*, 2015. The starches obtained were characterized by their physical and chemical properties. The results showed both the rice varieties have favourable physicochemical characteristics in their starches as pharmaceutical excipients while some modifications in the isolation and storage procedures would rather enhance those characteristics more precisely. This knowledge of starch properties will be helpful in explaining the behaviour of these starches and selecting them as necessary when used as pharmaceutical excipients.

**Keywords:** *Rice varieties, Rice Starch, Physicochemical properties, Pharmaceutical excipient*

## Health Related Quality of Life among Patients with Chronic Kidney Disease in Sri Lanka: a Review

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Chronic Kidney Disease (CKD) gives a considerable burden to Sri Lankan health care delivery system. Prevalence of CKD rise is due to high prevalence of non-communicable diseases and unknown aetiologies. Health Related Quality of Life (HRQOL) is reduced with the initiation and progression of the disease. Many factors significantly influenced HRQOL of CKD patients. This study reviews the state of HRQOL among Sri Lankan CKD patients and factors associated with the HRQOL. The search was done via PubMed, CINAHL, Web of Science, and Google Scholar according to predefined criteria. Selected articles were reviewed and the data relevant to the study were extracted. Extracted data were entered into the summary table and organized according to the research objectives. Seven articles were selected for the final analysis. All the studies were cross-sectional studies. Sample size range from 120 to 1174. Haemoglobin level, being employed, high education level, and advanced stages of CKD were identified as factors that positively influenced HRQOL in CKD patients. Depression, psychological distress, symptom burden, and age negatively influenced on HRQOL. Depression and psychological distress are common among Sri Lankan patients with CKD. Impaired social support, perception of low social support, economic burden, high out pocket expenditure, unemployment are the main causes for the depression and psychological distress among patients with CKD in Sri Lanka. Health care professionals need to pay more attention on HRQOL and factors associated with HRQOL among patients with CKD.

**Keywords:** Chronic Kidney Disease, Quality of life, Health related Quality of Life, Sri Lanka

# Knowledge and Practices Regarding Open-System Endotracheal Suctioning Among Intensive Care Unit Nurses at the National Hospital of Sri Lanka

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Open-system endotracheal suctioning (OS-ETS) is performed on critically ill requiring mechanical ventilation to keep the airway patent. Intensive care unit (ICU) nurses need to perform this procedure ensuring patient safety while taking measures to prevent ventilator associated pneumonia. This study aimed at assessing knowledge and practices of ICU nurses regarding OSETS. In phase I, a descriptive cross-sectional survey was carried out to assess knowledge regarding OS-ETS among a convenience sample of 150 ICU nurses from the National Hospital of Sri Lanka using a pre-tested self-administered questionnaire. In phase II, a subsample of 50 ICU nurses who participated in the survey was observed while performing OS-ETS by two trained independent raters using a pre-tested previously validated structured 20 item check list. Data were analysed using SPSS version 21. Mean overall knowledge score was  $57.93 \pm 12.81$ , while the mean overall practice score was  $63.70 \pm 7.81$ . Participants had good knowledge on indications, suction catheter selection criteria, infection control practices, hyperoxygenation, suction pressure selection and post suction practices. Poor knowledge was evident regarding contraindications, hazards/ complications, patient positioning and suctioning techniques. Good practices were observed among 26 (56%), while poor practices were observed in areas of patient positioning, verbal reassurance, infection control practices and chest auscultation. The findings revealed that ICU nurses have poor overall knowledge on OS-ETS though their practices were favourable. The study highlights the need for continuous professional education for nurses to address the gaps identified, and establishing practice guidelines regarding OSETS for improving quality and safety in health care.

**Keywords:** *Intensive care nurses, Open system endotracheal suctioning, Knowledge and practices*

# Prevalence of Unintentional Home Injuries and Awareness of Child Safety among the Parents of Inpatient Children at Sirimavo Bandaranayake Specialized Children's Hospital Peradeniya

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Unintentional injuries are estimated to cause 389,000 annual child deaths in Southern Asia resulting in an annual loss of 74 healthy lives per 1000 population. In Sri Lanka, childhood injuries have been reported as the fourth leading cause of child mortality under 5 years. A descriptive cross-sectional study was conducted in Sirimavo Bandaranayake Specialized Children's Hospital-Peradeniya, Sri Lanka with the aim to identifying commonly reported types of unintentional home injuries and to assess the effects of parental factors on awareness of child safety. Under 6-year-old inpatient children and their parents were included in the study. Data were collected from 99 child-parent pairs within one-month period starting from 31st January 2020. An interviewer-administered questionnaire was used to collect data, followed by a simple physical examination of each child. Data were analysed using Minitab 18 statistical software. Among the participants, majority of the children were male (64.6%). The most common type of unintentional home injury was fall injuries (75.76%). In more than one-third of cases (39.39%), mother was the person who was present with the child at the time of the injury. It was found that unemployed mothers were having significantly higher awareness on child safety and injury prevention compared to mothers who were working ( $p=0.005$ ). The results of this study suggest that falls as the most commonly reported unintentional home injury which lead to hospital admission among the children under 6 years of age. The findings also reveal that unemployed mothers have better awareness on child safety and injury prevention.

**Keywords:** *Unintentional home injuries, Parental awareness, Child safety*

# **Relationship between Hip Abductor Muscle Strength and Flat foot Deformity among Undergraduates at Faculty of Allied Health Sciences, General Sir John Kotelawala Defence University**

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Numerous factors and many inter relationships between various anatomical deformities affect flat foot. The objective of this study was to find the relationship between arch index and hip abductor muscle strength in both unilateral and bilateral flat foot among undergraduates, at the Faculty of Allied Health Sciences (FAHS), General Sir John Kotelawala Defence University (KDU). A descriptive cross-sectional study was carried out including 510 students aged between 19-40 years. Flat foot students were identified using the Arch Index (AI) using modified Harris matt and AUTOCAD software. The hip abductor muscle strength was measured using modified sphygmomanometer. The results indicated statistically significant relationships between unilateral and bilateral flatfoot with hip abductor muscle strength. A weak negative correlation was noted between left side hip abductor muscle strength and AI among the students with bilateral flatfoot ( $p=0.04$ ,  $r=-0.15$ ) and also between left side hip abductor muscle strength and left side AI in left unilateral flatfoot students ( $p=0.04$ ,  $r=-0.32$ ). However, no significant difference was noted between hip abductor muscle strength and the flatfoot condition.

**Keywords:** *Flatfoot, Hip abductors, Arch index*

## Family Members' Experiences Related to Organ Donation of Brain Dead Patients

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Organ transplantation from brain dead patients in Sri Lanka has become a critical medical intervention since the availability of organs has fallen below the requirement. Nonetheless, the difficulty in obtaining the consent by the family members continues to prevail. This study aimed to describe the family members' experiences related to organ donation of brain dead patients in Neuro - Surgical Intensive Care Unit in National Hospital of Sri Lanka. Ten immediate family members who have provided their consent to proceed with an organ donation of their loved ones were selected purposively. The interviewing was done at the hospital premises. This was conducted as a phenomenological study. Data collection was performed with semi-structured interviews using a theme guide from March to June 2019. Thematic analysis was used for data analysis. Ethical approval was obtained from the National Hospital of Sri Lanka. Three themes that emerged from the transcribed interviews were: decision conflict, respecting the donor and acceptance of the unexpected death. Stressful decision making, family involvement and internal dissonance were the sub-themes emerged from decision conflict. Further, religious beliefs, honouring the donors' wishes, saving recipient life, letting the donor live on and comforting the grief were the sub-themes derived from respecting the donor. Dedication of health care professionals, the ambiguity of brain death and awareness were derived from the last theme. The study revealed that the overall attitudes towards organ donation of a brain dead patient have a slight negative bias among Sri Lankan society. Hence it is recommended to have public educational interventions to educate the society regarding organ donation.

**Keywords:** *Brain death, Organ donation, Family Members, Experience*

# Investigation of Nasal Colonization of *Methicillin-Resistant Staphylococcus aureus* Among Nursing Students at a University in Sri Lanka

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Methicillin-Resistant *Staphylococcus aureus* (MRSA) is one of the important pathogenic bacteria within the hospital and the community. Asymptomatic nasal carriers are potential sources for transmission and subsequent infection. The objectives of this study were to determine the MRSA nasal colonization among nursing students of the Department of Nursing, Faculty of Allied Health Sciences, University of Peradeniya, Sri Lanka and to assess associated risk factors. This was a descriptive cross-sectional study which was conducted from January 2020 to March 2020 with voluntary participation of 135 nursing students. Relevant data were collected by using a pre-tested, self-administrated questionnaire. Participants were requested to collect nasal swabs to investigate colonisation of MRSA. Routine standard microbiological methods were used to isolate *Staphylococcus aureus* and cefoxitin disk diffusion method was used to detect methicillin sensitivity. Collected data were statistically analysed and the possible associations with risk factors were assessed by cross tabulations and chi-square test. Total of 135 participants constituted with 34 males and 101 females between 21-27 years. Out of them 15.56% (21/135) were identified as colonized with *Staphylococcus aureus* and 5.19 % (7/135) were MRSA. History of skin infection was the only known risk factor identified as associated with MRSA nasal colonisation (OR=26, CI=2.99-226.13, p=0.00). Although identified MRSA colonisers were relatively low in the present study, they were potential candidates for transmission and is a concern in healthcare facilities. As screening programs are limited in Sri Lanka due to lack of facilities and financial resources, students should be made aware and the importance of simple preventive measures such as hand hygiene should be emphasised.

**Keywords:** *Methicillin-Resistant Staphylococcus aureus* (MRSA), Nasal colonization, Nursing students, Risk factors



# Manual Immature Reticulocyte Fraction: a Reliable Marker to Assess Post Traumatic Blood Loss.

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Haemorrhage is a common stress condition following acute trauma that needs prompt medical attention as it can be fatal. Traumatic hemorrhage be classified into three categories; mild, moderate, and severe, based on clinical manifestations and outcomes expected with each. However, in some instances, clinical features may not reflect the exact degree of blood loss due to other comorbid factors etc. Rapid marrow response to hemorrhage includes the release of more immature red cells; reticulocytes and normoblasts depending on haemopoietic stimulus. Therefore, the presence of red cell precursors in peripheral blood is an expected marker following acute hemorrhage. Among reticulocyte parameters, Immature Reticulocyte Fraction (IRF) is widely used to indicate the erythropoietic activity of the bone marrow in stress conditions. Even though the manual reticulocyte count is performed in laboratories, calculation of manual IRF is not routinely practiced. Based on morphology, reticulocytes can be classified into immature and mature sub types. Although automated method is available, it is costly to use. Therefore, this study was performed to evaluate the relationship of manual IRF with degree of hemorrhage in acute trauma. In this analytical cross-sectional study, 38 blood samples of acute trauma patients admitted to emergency trauma care at a tertiary care hospital were analyzed. The IRF values were significantly higher in study subjects with severe hemorrhage than mild and moderate. When the time duration from trauma to admission was considered, subjects with clinically severe hemorrhage showed high IRF values within one hour. Appearance of the most immature (stage I) reticulocytes were noted after two hours of trauma in study subjects. Therefore, this study supports the ability of manual IRF in objective assessment of early marrow response to hemorrhage thus assessment of severity of acute trauma. Thus, the manual IRF in peripheral blood can be considered an important, reliable, and cheap laboratory indicator in acute trauma care in the diagnosis and management of acute blood loss.

**Key words:** *Immature Reticulocyte Fraction, Degree of hemorrhage, Acute trauma*

# Awareness on Prevention of Common Oral Diseases Among Non – Dental Undergraduate Students of University of Peradeniya

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In Sri Lankan context, dental caries, periodontal diseases and oral cancers are the common oral diseases with a higher prevalence. The objective of this study was to assess the awareness on prevention of common oral diseases among non-dental undergraduate students of University of Peradeniya. A descriptive cross-sectional study was conducted among 489 non-dental undergraduate students in University of Peradeniya. A self-administered questionnaire was used to collect data in the study. Awareness of the participants was categorized into three groups according to the scores they obtained ( $\geq 75$  – High Awareness, 74-50 – Moderate Awareness,  $\leq 50$  – Low Awareness). Data was analyzed using SPSS version 25 and 0.05 p value was considered as the level of significance. Out of 489 students, 243 (49.7%) were male and 246 (50.3%) were female. Majority of the participants (82.82 %) had lower awareness level on prevention of common oral diseases while only 0.2% had high awareness. Students from the Faculty of Medicine had the highest awareness and students from the Faculty of Management had the lowest awareness. Statistically significant difference was observed in awareness levels between the health related and non-health related faculties ( $p < 0.01$ ). This study reveals that the non-dental undergraduates of University of Peradeniya have a low awareness on prevention of common oral diseases. Thus, it is suggested to take measures to improve awareness on common oral diseases among the university student population which will be very effective in preventing oral diseases and building a healthy population.

**Keywords:** *Common oral diseases, Awareness on prevention, University undergraduates*

## Behavioural and Psychological Impact of COVID-19 on a Group of Youth and Young Adults repatriated back to Sri Lanka from the UK: a Qualitative Study

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The COVID-19 pandemic affected international students around the world, including the Sri Lankan undergraduate and post-graduate students who were studying in the UK, and they were repatriated to Sri Lanka by the government last May. The current study aimed to explore and understand the impact on behaviour and psychological changes on this youth and young adult group of being under lockdown in the UK, repatriation, quarantine processes and self-isolation, as well as the experience during the journey from the UK to Sri Lanka. This qualitative study was planned and conducted in a quarantine environment based on the lived experiences of investigators, who were also students repatriated to Sri Lanka from the UK due to COVID-19 pandemic, which is also the significance of this study. A convenient sample of sixteen (16) students (age ranged from 18 – 34) participated in the study. Data was collected using three investigative methods: questionnaires, researcher's objective observations and semi-structured interviews (over the phone or online). Data analysis was done using thematic analysis method. There were three preliminary themes that emerged from the study: (1) Fear, worry and anxiety, (2) Adherence to safety precautions, and (3) Agitation. Findings indicate that the abrupt changes to their education and day-to-day lifestyles, perceived stigma and emotional imbalance during this stressful situation caused psychological as well as behavioural challenges and difficulty in coping among this group. Findings highlight the need for addressing their age-specific psychological needs when developing guidelines to manage similar situations in the future and to increase resilience.

**Keywords:** *COVID-19, repatriation, youth and young adults, psychological and behavioural patterns.*

# Usefulness of Timed Up and Go Test, Berg Balance Scale and Six Minute Walk Test as Fall Risk Predictors in Post Stroke Adults Attending Rehabilitation Hospital Ragama

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Stroke is a major risk factor for falls. However, there are no established practices that are being used to predict fall risk with stroke patients in the Sri Lankan stroke care settings. The purpose of this study is to determine the usefulness of Timed Up and Go test (TUG), Berg Balance Scale (BBS) and Six Minute Walk Test (6MWT) as fall risk predictors in post stroke individuals and to introduce cut off values to predict fall risk. Seventy four patients with first ever stroke during past year (mean age  $56.5 \pm 28.5$ , males 67.6%) recruited from the Physiotherapy Unit, Rehabilitation Hospital, Ragama; 17 (23%) had history of falls. History of falls was recorded from participants' interview. Each participant underwent TUG, BBS and 6MWT. Scores were compared with existing cut off values. Receiver Operating Characteristic (ROC) curves were constructed to describe sensitivity, specificity and predictive values. Optimum cut off values for fall risk prediction were determined. There is no significant difference in the baseline characteristics between the two groups. The cut off values for fall prediction of three tests were recognized as follows; TUG  $\geq 23$ s,  $p = 0.044$ , AUC = 0.662; BBS

**Keywords:** *Stroke, fall risk, Timed Up and Go Test, Berg Balance scale, six Minute walk Test*

## Formulation Development for a Herbal Cream incorporating the Extracts of *Curcuma zedoaria* Rhizome

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*Curcuma zedoaria* is a perennial herb that belongs to the family Zingiberaceae. In traditional medicine, the rhizome of *Curcuma zedoaria* is used to treat various diseases including inflammatory conditions. The objectives of the study were to formulate a stable anti-inflammatory cream by incorporating aqueous extract of *Curcuma zedoaria* rhizome (ARE) and to investigate its phytochemicals. ARE was screened for phytochemicals. Fourteen different trial based formulations were developed by drop-wise addition of the aqueous phase to the oil phase with continuous stirring at 60°C (fusion method). The formulations were subjected to characterization tests and stability tests (real time and accelerated) for 90 days. Among them, the best two base formulations, which were stable for the tested period of 90 days, were selected. Creams with 0.75%, 1% and 1.5% (w/w) of ARE were prepared using the selected two base formulations and characterization and stability studies were conducted. Creams with 0.75% and 1% (w/w) ARE were stable for 90 days at both real and accelerated conditions. According to the characterization, all creams were identified as oil in water emulsions with pH of 6. The parent base texture was not changed after incorporating the extract. Flavonoids, tannins, alkaloids, saponins, terpenoids, carbohydrates and gums were presented in ARE. It is concluded that using newly formulated bases, there is a possibility to formulate a stable anti-inflammatory cream by incorporating ARE of *Curcuma zedoaria*, a plant that is well known to have anti-inflammatory activity in traditional medicine. Further, it is recommended to establish quality control standards for the novel formulation for future studies.

**Keywords:** *Curcuma zedoaria*, formulation, cream, stability

## POSTER PRESENTATIONS



# Association of Quadriceps and Hamstring Muscle Strengths with Low Back Pain due to Non-contact Injuries among Fast Bowlers Aged Between 15 – 19 Years in Division 1 Boys' Schools in Colombo

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The purpose of this study was to investigate how quadriceps and hamstring muscle strengths associate with low back pain (LBP) due to non-contact injuries among 102 fast bowlers aged between 15-19 years at Colombo division 1 boys' schools in Sri Lanka. Eighty-five fast bowlers fulfilled the requirements and an interviewer administered questionnaire was used to gather the demographic data regarding general characteristics and the severity of low back pain respectively. Bowlers were prospectively monitored over the competition period of 2019 cricket season and the quadriceps and hamstring muscle strengths were recorded. SPSS software was used to analyse the data. Thirty-seven (43.5%) of the subjects were presented with LBP due to non-contact injuries. Reduction of quadriceps strength of dominant side leg and hamstring strength of non-dominant side leg were found to be significantly associated with LBP ( $P < 0.05$ ). Conflicting results were found for the association of quadriceps strength of non-dominant side leg and hamstring strength of dominant side leg with LBP ( $P > 0.05$ ). There was a significant difference for the quadriceps strength of dominant side leg and hamstring strength of non-dominant side leg between the fast bowlers with and without lower back pain. The results concluded that reduced quadriceps muscle strength of dominant side leg and reduced hamstring muscle strength of non-dominant side leg have an important role in predisposing a fast bowler to have an increase in low back pain occurring due to non-contact injuries.

**Keywords:** *Quadriceps strength, Hamstring strength, Low back pain, Non-contact injuries, Fast bowlers, Age 15-19 years*

## Does Learning Environment Differ in BSc. Nursing Degree Programmes in Sri Lankan State Universities?

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The optimum learning environment of the degree programme provides a better indication of its quality. Therefore, the objective of the study is to assess the learning environment of BSc. Nursing degree programmes in Sri Lankan state Universities. A descriptive cross-sectional study was conducted among all 4<sup>th</sup> year nursing undergraduates who were studying in six Sri Lankan state universities; University of Sri Jayewardenepura, Peradeniya, Ruhuna, Jaffna, Eastern and General Sir John Kotelawala Defence University. These universities are mentioned anonymously in arbitrarily order. The sample size was 161 and the data was collected by already validated Dundee Ready Education Environment (DREEM) questionnaire. The questionnaire consisted of five domains; student's perception of learning, student's perception of teachers, student's academic self-perception, student's perception of atmosphere and student's self-perception. Overall scores of DREEM and subdomains scores were calculated and categorized as very poor, significant problem, more positive than negative and excellent. The results revealed that the median score ( $\pm$ IQR) of DREEM were  $127 \pm 12$ ,  $130 \pm 31$ ,  $127 \pm 18$ ,  $133 \pm 16$ ,  $129 \pm 23$ ,  $126 \pm 13$  among Universities out of 200. It showed that there was more positive than the negative environment in all BSc. Nursing degree programmes. Furthermore, the subdomains of DREEM also revealed that all median scores were within more positive than negative group but moving towards the lower margin. Therefore, remedial actions should be taken to uplift the learning environment to improve the quality of all bachelor of nursing degree programmes in Sri Lanka in the future.

**Keywords:** *Learning environment, BSc. Nursing degree programmes, Sri Lankan state universities*



# Effects of Exposure to Digital Screens in Children and Adolescents

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Using of screens has become an integral part of life over time. The screens have become more sophisticated and technologically advanced. Concerns have been raised in society on the excessive usage of screens by children. The study focused on psychological effects in relation to sleep deprivation, behaviour changes and possible behaviour outcomes of using digital screens. The sample was a convenient random sample of 600 male children from three urban schools, aged between 05-18 years. Children below the age of 12 years were assessed individually through play, and paper and pencil activities. Data was collected through parents and teachers regarding their behaviour. Minnesota leisure time activity questionnaire, State-Trait anxiety inventory and Outcome questionnaire 45 were used to collect data. A self-assessed questionnaire was used to collect data regarding the use of smart devices, frequency of use and level of addiction. SPSS 22 was used to assess data. Ethical clearance was taken from the Ethics Review Committee of University of Peradeniya. The sample showed a positive correlation with addiction to video games/extended screen time and antisocial behaviour traits. The study found moderate evidence of positive association between duration of screen time and severity of symptoms of anxiety. Children below 12 years showed only aggressive behaviour when devices were taken away from them. Moderate evidence was found with screen time including television, computer, video and mobile phone were associated with poor sleep outcomes including delayed bedtimes, shortened total sleep time and daytime tiredness.

**Keywords:** *Screens, Physiological responses, Psychological wellbeing*

# Knowledge on Disaster Preparedness and Associated Work Related Factors among Allied Health Professionals at Teaching Hospital, Jaffna

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Sri Lankans have faced major natural hazards from time to time. Though disasters create a heavy physical and psychological burden for the members of the healthcare team, their preparedness to meet the disaster is of utmost important as they are in the frontline of disaster management. The purpose of this study was to assess the level of knowledge on disaster preparedness and associated work-related among allied health professionals at Teaching Hospital, Jaffna. A descriptive cross-sectional study was done with 300 allied health professionals using stratified random sampling method. A multi-sectional self-administered questionnaire was used to collect data. Correlation analysis and independent sample t-test and ANOVA were performed to identify associated factors. The mean age of participants was 34.5(SD±8.031) years. More than half of the participants were Nurses (n=209, 69.7%). The following work-related factors were statistically significant on knowledge of disaster preparedness among allied health professionals. Travelling distance from residence positively correlated with knowledge on disaster preparedness  $r(300) = 0.123$ ,  $p = 0.033$ . Educational status, occupation and professional experiences were statistically significant associated factors for knowledge on disaster preparedness ( $p < 0.001$ ). There is a significant gap between the knowledge level on disaster and current needs of disaster preparedness among allied health professionals. They had limited opportunities for training. Especially nurses had such practice than other allied health professionals. Therefore, training should be provided focusing on the specific gaps identified. Disaster preparedness should be rehearsed possibly through training and simulation exercises because training and education in disaster preparedness are considered as the back bone of disaster management.

**Keywords:** *Disaster preparedness, Knowledge, Associated work related factors*

# **The Relationship between Static Foot Posture and Chronic Bilateral Knee Osteoarthritis among the Patients Attending Department of Rheumatology and Rehabilitation (General), National Hospital, Sri Lanka**

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Knee osteoarthritis is one of the most common types of arthritis present in Sri Lanka that deteriorates the quality of life and physical performances of affected individuals. In chronic bilateral knee osteoarthritis, there is a higher possibility to develop deviated foot and ankle characteristics as a result of alterations in the mechanical alignment of lower limbs. Therefore, the main purpose of this study was to evaluate the relationship between static foot posture and chronic bilateral knee osteoarthritis. A descriptive cross-sectional study was conducted under consecutive sampling method including 155 patients within the age group of 40–80, who were clinically diagnosed as bilateral knee osteoarthritis and fulfilled the inclusion criteria at Department of Rheumatology and Rehabilitation (General), National hospital of Sri Lanka. The foot posture was evaluated using two foot measures, Foot Posture Index (FPI) and Staheli Arch Index (SAI). The study included 135 females and 20 males with the mean age of  $59.19 \pm 8.649$  years old. According to the FPI and SAI, altered foot postures were exhibited by 52.3% and 67.7% of the participants respectively. Significant positive correlations ( $P < 0.01$ ) were emphasized between chronicity of the condition and each of the foot posture changes. Furthermore, pronation (51.3%) and flatfeet (57.7%) are common among patients who were  $\geq 60$  years. There is a significant difference ( $P < 0.01$ ) between foot postural changes of males and foot postural changes of females which were evaluated using FPI while a significant difference was not denoted ( $P > 0.05$ ) for foot posture changes which were evaluated using SAI. Altered foot postures are common among chronic bilateral knee osteoarthritis patients in Sri Lanka. Therefore, it is recommended that assessment of foot posture in knee osteoarthritis patients is an essential component in clinical practice in Sri Lanka.

**Keywords:** Chronic Bilateral Knee Osteoarthritis, Foot posture index, Staheli Arch Index

# Knowledge and Practice of Pre-Hospital Care after a Road Traffic Injury among Three-Wheel Drivers and Associated Factors in Selected Police Areas in Colombo District

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Globally, the number of road traffic deaths remains unacceptably high. However, effective pre-hospital services can minimize many crash consequences. Usually, basic pre-hospital care is delivered by a lay first responder, mostly another driver. The aim of this study is to describe the knowledge and practice of pre-hospital care after a road traffic injury among three-wheel drivers and associated factors in selected police areas in Colombo district, Sri Lanka. A community based descriptive cross-sectional study was carried out in Colpetty, Bambalapitiya, and Kirulapone police areas. A sample of 384 three-wheel drivers registered in the above police areas were recruited using simple random sampling method. A structured pre-tested interviewer administered questionnaire was used for data collection. Descriptive analysis was used to determine the level of knowledge and practices regarding pre-hospital care. To identify the associated factors for knowledge and practice chi-square test was used. SPSS version 25 was used for data entry and analysis. Ethical approval was obtained from Ethics Review Committee, Faculty of Medical Sciences, University of Sri Jayewardenepura. It was found out that only 31.5% of the drivers had first aid training. Even though the majority (52.9%) of the drivers had good knowledge, 65.2% had poor practice towards pre-hospital care. Advanced age and having a first aid training were significantly associated with good knowledge ( $p < 0.05$ ). Drivers with previous first aid training within the last ten years, having fewer hires per day and having good knowledge were significantly associated with better first aid practice. Although knowledge regarding pre-hospital care was adequate the practice of pre-hospital care was inadequate.

**Keywords:** *Pre hospital care, Knowledge, Practice, Road traffic accidents*

## Development of Neem Oil and Virgin Coconut Oil Based Cream Formulations with Methanolic Extract of *Leucas zeylanica* and *Ophiorrhiza mungos* Leaves

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Ultraviolet radiation (UV) causes numerous skin diseases when exposed in excess. *Ophiorrhiza mungos* (OM) and *Leucas zeylanica* (LZ) have been identified as plants with high Sun Protection Factor (SPF) values. Neem oil and Virgin Coconut Oil (VCO) are natural oils that have been used in Ayurvedic medicine for several indications. The objective of the study was to evaluate the SPF activity and carry out stability studies in Neem oil and VCO based cream formulations consisted of methanolic extracts of OM and LZ. The Methanolic extracts were incorporated into selected ratios of VCO and Neem oil bases. Samples were subjected to secondary homogenization. The most stable ratios of the emulsions were identified as 33% VCO: 35% water: 32% Tween<sub>80</sub>, and 29% Neem oil: 42% water: 29% T<sub>80</sub>. Cream formulations were prepared based on the above-identified ratios. All creams were thermodynamically and kinetically stable for more than 120 days at room temperature (28± 2 °C). The SPF values of creams were above 30 and they showed higher SPF values compared to the pure leaf extracts of OM and LZ. Neem oil-based creams had the highest SPF values which are greater than 38. The creams were o/w type and in the acceptable pH range for topical application. Due to the consistency of the creams, they could retain on the skin for a longer period. All creams composed with other standard sunscreen characteristics which increase the market value of the product.

**Keywords.** Sun Protection Factor, Stability evaluation, Cream

# Knowledge Regarding Weight Management through Lifestyle Modification among Overweight and Obese Type 2 Diabetes Mellitus Patients

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Energy intake in excess of the requirement and physical inactivity are resulting in overweight and obesity, which are the major driving forces behind escalating type-2 diabetes epidemics worldwide. This study aimed to assess the knowledge regarding weight management through lifestyle modification and assess the relationship between socio demographic factors associated with knowledge among overweight and obese type 2 diabetic patients attending the Diabetic clinic at the Teaching Hospital, Jaffna. The study was a hospital based descriptive cross-sectional study that was carried out among 414 patients. Data were collected using an interviewer administered questionnaire. Data were analyzed using SPSS version 22. Chi-square test was used to determine the factors affecting the knowledge. Study participants' age range was from 27-81 years and the mean age was 56.1. Among the study participants, 28.3% were overweight and 71.7% were obese. Most of them were females (74.6%). Only 2.4% of the participants knew the healthy BMI range for Sri Lankans. Only 13.8% of the participants knew whether they were obese or overweight. Most of the participants knew that excess calorie intake (77.8%), physical inactivity (99.8%), and family history (88.4%) were the causes of overweight and obesity. The majority of the participants stated that following a proper diet (100%) and doing regular exercises were healthy ways to maintain ideal body weight. Nearly 25.6%, 18.4% of the participants correctly said the minimal duration to perform an exercise in a day for overweight, obese person respectively. Most of the participants (81.2%) had good knowledge of weight management through lifestyle modifications. However further studies should be done to assess their practice pattern.

**Keywords:** *weight management, Life style modification, Overweight, Obesity*

## Development of a Herbal Soap using Selected Medicinal Plants and Evaluation of Its Antimicrobial Activity

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Soap is used as a modality for topical application of medicinal plants used in the treatment of skin infections. In herbal soap, natural bioactive constituents with a variety of therapeutic activities are incorporated into basic soap medium. Natural herbs are the main ingredients of herbal soap which is safer and beneficial than commercial soap. Antimicrobial activity of leaf extracts of *Azadirachta indica*, *Cassia fistula* and flower extract of *Nelumbo nucifera* has been evaluated individually and in combination by a previous study. This study aims to formulate a novel herbal soap using the above combined extract and to investigate its antimicrobial activity. Further, this study evaluates the physicochemical characteristics of soap. The combined extract used in the formulation of soap was prepared by incorporating aqueous extracts of *A. indica*, *N. nucifera* and ethanol extract of *C. fistula* at a ratio of 4:1:1 according to the previous study. Soap was formulated by incorporating the combined extract with other ingredients into the melted glycerin soap base. The antimicrobial activity of formulated soap was tested by agar well diffusion method against *Staphylococcus aureus*, *Pseudomonas aeruginosa* and *Candida albicans* and compared with standard drugs. Test was done in triplicate. Formulated soap exhibited antimicrobial activity against tested organisms with the highest activity against *S. aureus*. Physicochemical parameters of soap were evaluated by determining the colour, pH, % free alkali and % of alcohol insoluble matter of the soap. The pH at 28 °C was 9.11 and alcohol insoluble matter was 24.6% which were within the accepted range. Further studies are pursued to evaluate the safety and efficacy of the formulated herbal soap.

**Keywords:** Antimicrobial activity, herbal soap, *Azadirachta indica*, *Cassia fistula*, *Nelumbo nucifera*



## Knowledge on Usage of Thyroxin Tablet among Primary Hypothyroidism Patients Attending Endocrinology Clinic at Teaching Hospital Jaffna

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Hypothyroidism is a common condition in Sri Lanka as well as in the world. Many people are getting treatment for hypothyroidism in Jaffna. By having sound knowledge on the usage of thyroxin medicine, the quality of life can be improved. The goal of the study is to assess knowledge on the usage of thyroxin tablets among primary hypothyroidism patients attending the endocrinology clinic at the Teaching Hospital Jaffna. A descriptive cross-sectional study was conducted in 2019, which used an interviewer administered questionnaire, and included all primary hypothyroidism patients who attended the clinic during the data collection period. The data was analysed by SPSS 25 and chi-square test was performed to find out the relationship. Among the participants majority were females (88.5%) in between the age of eighteen to thirty, and the mean age was 37 years. Most of the participants (97.7%) knew thyroxin should be taken once daily, 94.1% knew that thyroxin should be taken early in the morning on an empty stomach, 62% knew thyroxin should be stored in a brown colour container. Only 19% knew that thyroxin can cause side effects, 40% knew that consulting the doctor upon noticing any side effects following ingestion of thyroxin is important. However only 19% knew that they should consult the doctor if they missed taking the tablet for more than 3 days. Nearly two-thirds of the participants (64.9%) had poor knowledge. Factors were assessed and no relationship was identified. To improve the patients' knowledge, increase the availability of articles in newspapers, internet, and books in their mother tongue, and small sessions can be carried out in the clinic setup.

**Keywords:** *knowledge, hypothyroidism, Teaching Hospital Jaffna*



## Knowledge on Diet among the Ischemic Heart Disease Patients Attending Cardiology Clinic at Teaching Hospital Jaffna

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Ischemic Heart Disease (IHD) is a major cause of death worldwide. In Sri Lanka, cardiovascular diseases cover 40% of Non-communicable diseases. IHD was ranked as the leading cause for the hospital deaths since year 2013 and 14.2% of total deaths in 2017. Un-healthy dietary pattern is one of the modifiable risk factors for IHD. The aim of this study is to evaluate the knowledge on diet among IHD patients attending the cardiology clinic at the Teaching Hospital, Jaffna. A descriptive cross-sectional study was conducted in 2019, using an interviewer-administered questionnaire among 414 IHD patients. Data were analysed using SPSS 25 and chi-square test was performed to find out the relationship. The majority were male (70.3%), and mean age was 66.2. Among them, 68.4% were having dyslipidemia. Nearly two thirds (67.6%) of the participants knew that un-healthy dietary patterns can cause IHD. The majority of them knew that margarine (92.3%), fried foods (76.8%) and fast foods (74.2%) can increase blood cholesterol level. However, the majority of them were not aware that Olive oil (78.5%) and Oats (59.7%) are good to consume and white bread (56%) is bad. Majority of them were aware that vegetables (72%), fruits (52.2%) and legumes (51.7%) were good to take in high amounts. However, 64.3% of them did not know that cereal was also good to consume. Only 28.3% had good knowledge on diet. Family history and highest educational level ( $p < 0.05$ ) showed a significant relationship with knowledge. Conducting a nutritional awareness programme for IHD may help to increase the level of knowledge.

**Keywords:** Knowledge, Diet, Ischemic Heart disease, Teaching Hospital Jaffna

## **Assessment of the Awareness in Management of Chemotherapy-Related Adverse Effects Experienced by Cancer Patients at Apeksha Hospital, Maharagama, Sri Lanka**

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Cancer accounts for the majority of the disease related deaths all over the world. Although cancer can be successfully treated with chemotherapy, the burden of chemotherapy related side effects makes a negative impact on the treatment in patients. The study was carried out for the purpose of assessment of awareness in the management of chemotherapy related adverse effects experienced by the cancer patients at Apeksha Hospital, Maharagama, Sri Lanka. Moreover, it focused on the patients' knowledge of the disease and the treatment schedule, and the most frequently experienced side effects by the patients. This is a single centre descriptive cross-sectional study. The study population of 155 cancer patients with multiple carcinomas, attending medical oncology clinics at Apeksha Hospital was selected randomly. An interviewer-administered questionnaire was used to gather information. Collected data was analysed by SPSS Version 23 software. The diagnosis of the disease was known by almost all the participants. The names of the chemotherapy medicines receiving were fully known by only one-fifth of the total population. The most commonly experienced adverse effect among the population was fatigue. Drinking an adequate amount of fluid had been the most frequently followed instruction in order to minimize the adverse effects. Discussions with healthcare professionals were chosen as the most effective way of having information. Discomfort due to chemotherapy related adverse effects may cause delay or early termination of treatments and increase unnecessary hospital admissions. Thorough counselling in managing the adverse effects accounts for a better quality of life for the patient.

**Keywords:** *Cancer, Chemotherapy, Side effects*

## **Association of Socio Demographic and Educational Factors on Knowledge and Attitudes on the Role of Community Pharmacist in Healthcare System among the Science Students of University of Jaffna**

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Community pharmacists are expanding their services from dispensing practice to various health services to the public. Understanding their role in healthcare system is essential to get a satisfactory service. The study was conducted among university students since they are educated community and they play a leading role in disseminating knowledge to other people. The objective of the study was to assess the knowledge and attitudes towards the role of community pharmacist among the science students of University of Jaffna and to correlate the influence of socio demographic and educational factors of them. It was an institutional based descriptive cross-sectional study. A self-administered, pretested and validated questionnaire was used to collect the data. SPSS version 23 statistical software was used to analyse the data. Descriptive statistics was used to describe the data and Chi Squared test was performed to determine the level of association. Among the total of 701 participants, 563 participants responded with the respondent rate of 80.3 %. The mean age of participants was  $24.61 \pm 0.9$  years and 53.8 % (n=303) of participants were males. 40.3% (n=227) of participants had good knowledge and 42.3% (n=238) of participants had positive attitudes. Age (p=0.004), gender (p=0.036), place of residence (p=0.012) and course of study (p=0.000) had statistically significant association with knowledge and only course of study (p=0.003) had statistically significant association with attitudes. The study revealed that more than half of the participants had poor knowledge and negative attitudes towards the role of community pharmacists. Awareness programmes should be conducted regarding the role of community pharmacists in the health care system.

**Keywords:** *Community Pharmacist, Knowledge, Attitudes, Health care system*

## **Prevalence and Association of Overweight with Major Non-Communicable Diseases among Elderly People Living in Kesbewa Secretariat Division, Colombo, Sri Lanka**

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Non-Communicable diseases (NCDs) have become a major global health problem. Cardiovascular diseases, diabetes mellitus, cancer and chronic respiratory diseases are considered major NCDs. Those conditions can commonly be seen among elderly populations. Therefore, a community based cross-sectional study was conducted among 368 participants over the age of 60 years to determine the prevalence of NCDs and its associated anthropometric measurements among elderly living in Kesbewa secretariat division, Colombo district, Sri Lanka. A representative sample was obtained by multi-stage cluster sampling technique. A pre-tested interviewer administered questionnaire was used, and body mass index (BMI) and waist hip ratio (WHR) were calculated through the anthropometric measurements. Statistical analysis was done by SPSS 23.0. Among the respondents, 60.9% (n=224) were females and mean age was 69.53±6.147. Out of the total sample, 58.1% (n=214) of respondents were suffering from major NCDs. The prevalence of cardiovascular diseases, diabetes mellitus (DM), cancer, chronic respiratory diseases were 19.3%, 40.2% 1.6%, and 12% respectively, and 42.4% of the respondents were suffering from at least one NCD. The results suggested that BMI (P<0.05) and WHR (p<0.05) are significantly associated with major NCDs. The analysis revealed a significant association between DM and overweight (p<0.05). There was no significant association between other major NCDs with overweight. The prevalence of NCDs are considerably high, and higher BMI & WHR are the major study observation of NCDs among the elderly. As the factors are considered as modifiable risk factors, actions should be taken to address these concerns at the community level to reduce the disease burden associated with NCDs.

**Keywords:** *Non-Communicable Diseases, Prevalence, Overweight, elderly*

# **The Association between Physical Activities and Overweight/Obesity among Adolescent Girls in Three Provincial Girls' Schools in Piliyandala Educational Zone, Colombo, Sri Lanka**

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Obesity/overweight in adolescents has been declared as a risk for non-communicable diseases in late life. The level of physical activity is considered a useful determinant in assessing the risk of overweight/obesity. Thus, this study aimed to determine the association between activity level and overweight/obesity among adolescent girls. A descriptive cross-sectional study was conducted in three selected girls' schools in Piliyandala Educational Zone. A total of 277 participants between 10-19 years of age, who were willing to maintain a 3-day activity diary were selected by simple random sampling technique. A pre-tested questionnaire was used to obtain demographic data. Results revealed that the prevalence of overweight and obesity was 15.2% and 13.7% respectively. About 48.4% were normal weight and 22.7% were underweight. The participants spent <2 hours (49.5%), 2-4 hours (35%), 4-6 hours (13%), >6 hours (2.5%) on mobile phone, computer and TV per day while they spent < 2 hours (16.3%), 2-4 hours (32.1%), 4-6 hours (24.2%), >6 hours (27.4%) on education purposes (i.e. tuition /study at home). Around 47.3% of participants spent 6-8h/day to sleep. The activity diary showed that 26% of students performed <60 min of exercises 1-3 days/week, while 74 % avoided performing any. In conclusion, the risk of obesity/overweight was dominantly seen in the adolescent girls in this study, and it was significantly associated with activity level ( $p<0.05$ ). Programmes on activity level modification would be an effective strategy in reducing the prevalence of overweight/obesity in adolescent girls

**Keywords:** *Obesity, Overweight, Physical activities*

## Knowledge and Attitude Regarding Adverse Drug Reaction Reporting and Associated Factors among State Pharmacists in Northern Province, Sri Lanka

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Adverse drug reaction (ADR) is a significant cause of morbidity and mortality worldwide. Reporting of ADRs is considered to be an important step to achieve safe drug use. Reporting of ADR becomes a part of the professional obligation of a pharmacist, as their role expands towards patient care rather than the dispensing. This study was conducted to assess the knowledge and attitude regarding ADR reporting, and to find out the association of socio-demographic and work-related factors among pharmacists working at public sector hospitals in Northern Province, Sri Lanka. It is a descriptive cross-sectional study which was conducted among 76 pharmacists using a validated self-administered questionnaire. Descriptive statistics were used to describe the data. Association of socio-demographic and work-related factors on knowledge and attitude was determined by chi-square test and fisher's extract test. Data were analysed by using SPSS version 23. The response rate of the study was 88.2% (n=67). The mean age of participants was  $35.8 \pm 9.3$  years and most of them were females (71.6%, n=48). A predetermined cut-off value was used as 70 % to determine the level of knowledge and attitude regarding ADR reporting. Among participants, 65.2% (n=44) of participants had good knowledge about ADRs and 67.2% (n=45) had a positive attitude towards ADR reporting. Extra working hours had statistically significant influence on knowledge on ADR (p=0.048) and working experience showed a significant influence on the attitude toward ADR reporting (p=0.03). This study revealed that the majority of pharmacists had a good level of knowledge and a positive attitude towards ADR reporting.

**Keywords:** Adverse drug reaction (ADR), Adverse drug reaction reporting, Pharmacists

## **Effectiveness of an Awareness Programme on Burn Prevention and First Aid among Grade 10 Students of Type 1 and 2 Schools in Kesbewa Divisional Area, Piliyandala Educational Zone, Colombo District, Sri Lanka**

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Burns are one of the most common household injuries, especially among children. Burn education is a must to reduce the levels of morbidity and mortality rate due to burns. This study was based on one group pretest posttest design and it was carried out to determine the effectiveness of an awareness programme on burn prevention and first aid among grade 10 students of type 1 and 2 schools in Kesbewa area. Stratified random sampling and cluster sampling were used to select schools and participants of the study. A self-administered pretested questionnaire was administered to 321 school children of grade 10, in order to obtain the socio-demographic data and to assess the previous knowledge on burn prevention and first aid. An awareness programme was developed and conducted to all the participants of the study on key factors regarding burn prevention and first aid for burns. Students answered the same self-administered questionnaire after seven days of awareness programme. There were 188 (59%) males and 133 (41%) females. According to the paired sample t test results, the average knowledge score of burn prevention before the awareness programme was 79.25 and after the awareness programme it was 91.43. Mean difference of marks was 12.18. Similarly, the mean difference between pre and post-test scores on first aid was 23.09. The average mark of the students after the awareness programme is significantly different from the average mark before the awareness programme ( $p < 0.05$ ). This study demonstrated that the awareness programme on burn prevention and first aid was effective for improving knowledge of grade 10 students in Kesbewa area. It is suggested to continue this awareness programme as an effective strategy to increase the awareness of school children on burn prevention and first aid for burns.

**Keywords:** *Burns, Prevention of burns, First aid, Awareness programme*



# **Knowledge and Awareness regarding Human Papilloma Virus (HPV) Infection and Vaccination among Adolescents Aged 14 – 16 Years in Selected Mixed Government Schools in Kesbewa Educational Division, Sri Lanka.**

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Human Papilloma Virus (HPV) is the most prevalent sexually transmitted infection worldwide. It causes cervical cancer which is the second most common cancer type among Sri Lankan women. HPV vaccine has been introduced for early adolescents in preventing HPV. Adequate knowledge and awareness regarding HPV and vaccine is effective in successful prevention. The objective of this study was to assess the knowledge and awareness regarding HPV infection and vaccination among adolescents aged 14-16 years who are studying in selected mixed government schools in Kesbewa Educational Division, Sri Lanka. A descriptive cross-sectional study was conducted among randomly selected 450 male and female adolescents aged 14-16 years who are studying in selected mixed government schools in Kesbewa Educational Division using a pre tested self-administered questionnaire. Results portrayed that only 139(30.89%) participants had heard of HPV infection before the study. Among them 113(81.3%) had overall poor knowledge regarding HPV infection. The mean knowledge score was  $6.01 \pm 4.332$  with the range of 0-18. Out of all participants, only 137(30.4%) had heard of HPV vaccine before the study and 117(85.4%) of them had overall poor awareness on HPV vaccination. The mean awareness score was  $3.12 \pm 2.997$  with the range of 0-11. Adolescents' knowledge and awareness on HPV infection and vaccination was significant by associated with parents' occupation ( $p < 0.05$ ; 95%CI). The study concluded that the majority of adolescents had overall poor knowledge and awareness regarding HPV infection and vaccination. It is necessary to implement well-designed, systematic health education interventions to enhance knowledge and awareness regarding HPV infection and vaccination among adolescents.

**Keywords:** *Knowledge, awareness, HPV infection, HPV vaccination, cervical cancer.*



## Comparative *in vitro* Bioequivalence Evaluation of Atenolol Tablets Available in Sri Lanka

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The availability of multiple brands for a single drug places health professionals and patients in a dilemma of drug substitution. Hence, evaluating the bioequivalence of different brands compared to a respective innovator drug is a timely need. This study was performed to compare the *in vitro* bioequivalence of commercially available brands of atenolol 50 mg tablets in the Sri Lankan market. Four different brands of atenolol 50 mg tablets (A<sub>1</sub> – A<sub>4</sub>) and the innovator drug (A<sub>5</sub>) were selected for the study. All the tablets were tested for organoleptic properties, uniformity of weight, thickness and diameter, hardness, friability, assay percentage, and dissolution. To evaluate *in vitro* bioequivalence of the selected drugs, their dissolution profiles were compared with the innovator drug using calculated fit factors (difference and similarity factors) and dissolution efficiencies of respective brands. The results of organoleptic properties of all the tested tablets showed no sign of defects. Tablets' thickness, diameter and hardness complied with the general standards. All the tested tablets complied with the British Pharmacopoeial (BP) standards for uniformity of weight, friability, assay percentage, and dissolution. Tablets; A<sub>1</sub>-A<sub>4</sub> had similarity factors above 50 and the difference factors below 15, revealing that their dissolution profiles are similar to the innovator product. According to the dissolution efficiency calculations, only A<sub>1</sub>, A<sub>2</sub>, and A<sub>3</sub> of the selected brands of atenolol 50 mg tablets were similar to the innovator. Hence, the brands; A<sub>1</sub>, A<sub>2</sub> and A<sub>3</sub> could be regarded as bioequivalent thus expected to produce similar therapeutic effects.

**Keywords:** Bioequivalence, Atenolol, Tablets, *in vitro*

## Parental Feeding Styles of Preschoolers in a Semi-Urban Setting in Kurunegala District

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Parental feeding style influences the nutritional status, growth, development, health and survival of preschool children. The objective of this study was to describe the parental feeding styles in selected preschools in a semi-urban setting in Sri Lankan context. A descriptive cross-sectional study was conducted among randomly selected 306 parent-preschooler pairs in selected preschools in Ibbagamuwa Divisional Secretariat in Kurunegala district. Validated, interviewer administered, 27-item, Parental Feeding Style Questionnaire (PFSQ) on a five-point Likert scale was used to assess four common feeding styles: Encouragement to Eat (EE), Control over Eating (CE), Emotional Feeding (EF) and Instrumental Feeding (IF). Mean scores were calculated for each scale which had a possible range between 1-5 with higher scores indicating a tendency for a particular feeding style. All data were analyzed using SPSS version 25. The mean age of the parents was 34.86 years ( $SD=4.93$ ). The majority were mothers ( $N=250$ , 81.7%) educated up to Ordinary Level ( $N=117$ , 38.2%) with an average monthly income between 30,000-50,000 LKR ( $N=133$ , 43.5%). The mean age was 58.06 months ( $SD=7.62$ ). Majority were girls ( $N=164$ , 53.6%) with normal weight for height (50.0%,  $N=153$ ). Mean scores for each feeding style were *EE*: 4.25 ( $SD=0.55$ ), *CE*: 3.2 ( $SD=0.61$ ), *EF*: 2.76 ( $SD=0.92$ ) and *IF*: 2.35 ( $SD=0.78$ ). Prominent parental feeding styles were Encouragement to Eat and Control over Eating. No gender differences were observed in parental feeding styles.

**Keywords:** Parental feeding styles, Preschool children, Parental Feeding Style Questionnaire (PFSQ)

## **Expectations of Patients who underwent Chemotherapy for Breast Cancers in Apeksha Hospital Maharagama**

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Breast cancer is the most common cancer among females all around the world and in Sri Lanka. It is the fifth leading cause of deaths (627 000, 6.6%) among all cancers and one of the main treatment options is chemotherapy. Patients receiving chemotherapy have reported several side effects which can affect health status of patients and lead to many issues. Therefore, the aim of the study was to assess the patients' expectations while having chemotherapy for breast cancers in Apeksha Hospital Maharagama which can be an aid in addressing the above issues as health care workers. A total of 207 patients were selected by simple random sampling. Data was collected through interviewer administered questionnaire and analyzed via SPSS. Mean age of participants was 54, and 91.3% of them were married. Participants expected further knowledge and support of the health staff during treatments. Television and newspapers were the most important sources of information. 96.1% of participants were expecting to share all the information about their treatment with the family members or care givers. 12.6% of the participants expected privacy to discuss their health problems. Majority, of 90.8%, were expecting a contact number to get information in an emergency or to solve their problems. Most of the respondents (80.7%) prefer to have further explanations on drugs that they received to take home for the management of side effects of chemotherapy. Out of the total sample, 96.6% of the patients reported that they were expecting to get more explanations regarding side effect management from nursing officers.

**Keywords:** *Expectations, Chemotherapy, Breast cancers*

# Knowledge, Attitudes and Practices on Antibiotic Therapy among Parents of Children Admitted to a Specialized Children's Hospital in Sri Lanka

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Antibiotics are used to prevent and treat bacterial infections. Globally, it is mostly prescribed for sick children than for adults. Antibiotic resistance is a critical global health issue. Over-prescription and inappropriate self-medication are the main culprits of antibiotic resistance. The objective of this study was to assess knowledge, attitudes and practices regarding antibiotic therapy among the parents of children getting admitted to a specialized children's hospital in Sri Lanka. A descriptive cross-sectional study was carried out with 403 participants at Sirimavo Bandaranayake Specialized Children's Hospital, Sri Lanka from January to March, 2020. A pre-tested, self-administered questionnaire was used to collect data. Participants had 51.85% overall knowledge on scale. Parents from urban areas had higher knowledge (59%) than parents from rural areas. 67% have never heard of antibiotic resistance and 69% have never received health education on antibiotics. 25% recognized that antibiotics can treat bacterial infections. Amoxicillin was the mostly identified antibiotic. 80.9% responded that antibiotics cure viral flu. Majority (64%) strongly agreed that parents should be further educated on pediatric antibiotic use. Parents had good attitudes (78.21%) and practices (71.27%) in using antibiotics. The study concludes that Sri Lankan parents have moderate knowledge but they have good attitudes and practices. Parental health education on antibiotics was critically poor. Parents believe that they should be further educated on judicious antibiotic use. Majority never self-medicate antibiotics to children without physicians' prescription. Physicians were the main source of information, and involvement of nurses and other healthcare professionals was low. Telecommunication minimally contributes in community health education on antibiotics.

**Keywords:** Antibiotics, Parents, Paediatric, Antibiotic resistance, Knowledge

## **Occupational Risk Factors Related to Cutaneous Leishmaniasis: a Descriptive Study**

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Cutaneous Leishmaniasis (CL) is an endemic disease in Sri Lanka and it is considered as a notifiable disease from year 2008. Anuradhapura has been one of the areas that shows the highest number of incidences of Leishmaniasis in Sri Lanka. The purpose of this present study was to identify the occupational risk factors associated with Cutaneous Leishmaniasis. A quantitative cross-sectional study was conducted among patients who were diagnosed with CL and visited the Dermatology clinic at the Base Hospital Thabuththegama. Two hundred participants were recruited to the study by using convenience sampling method. A self-administered questionnaire was used to collect data and Statistical Package for Social Sciences (SPSS) Version 21 was used to analyse the data. Majority of the participants were male (n=145, 72.5%) and 46% of participants were over 40 years of age old. More than half (n=123, 61.5%) of the participants were paddy cultivators. Being a paddy cultivator was a significant occupational risk factor for CL. The results showed that gender was statistically significant variable for CL ( $P < 0.05$ ). Statistically significant associations were also found at the level of 0.01 between occupation with gender, age and educational level. Furthermore, laborers (7.5%) were also more prone to be affected by CL compared with other occupations. Hence, special attention should be given to male paddy cultivators by providing health education on the disease, and identifying reservoir hosts and vector control will be important initiatives to prevent the spread of this disease.

**Keywords:** *Occupational Risk factors, Cutaneous Leishmaniasis*

## Exploration of the Door to Needle Time Gap of Administering Anti-Venom Serum (AVS) and Its Determinants: a Mixed-Method Study

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A mixed method study was conducted at the Teaching Hospital, Anuradhapura (THA) to describe the demographic characteristics of snake bites, determine the median time gap of administering anti-venom (AVS), to identify reasons for delaying administration of AVS and propose measures to be adopted to shorten the door to needle time gap. Ethical approval was obtained from the Ethics Review Committee, Faculty of Medicine, KDU. The descriptive cross-sectional part was based on snake bite victims (n=50) > 16 years of age who were admitted to the THA and received AVS (Anti-venom serum) therapy over a 3 ½ months period from 15<sup>th</sup> July 2019. The descriptive data was collected through an interviewer administrated questionnaire. Participants were purposively recruited for the qualitative study and in-depth interviews were conducted with health care professionals in THA and peripheral hospitals. Qualitative data were analyzed using thematic analysis with four themes including limited physical and human resources, issues in the diagnosis of envenoming, delays in preparation of AVS, and delays in transferring patients from local hospitals to THA. Quantitative data were analyzed by using SPSS 23 with Mann-Whitney U test. Among the sample 88% were (44) male and 12% were (8) female victims. Most bites were not identified (50%) and the most common bite was from Russell's viper (46%). Below ankle (82%) and between 6 a.m. to 6 p.m. were the commonest bite site and time. There were 40 (80%) indirect admissions and 10 (20%) direct admissions. Door to needle median gap of all direct and indirect admission was 125 (IQR= 65-158) minutes. Door to needle median gap in indirect admissions was 178 (IQR=90-210) minutes and direct admissions median gap was 72 (IQR=30-104) minutes. There was a significant difference between the median time gap of indirect and direct admissions. Poor rural hospital facilities, overcrowding, inadequate staff and the unavailability of quality tubes for whole blood clotting time are the main factors contributing to the time gap. Final suggestions are increasing bed capacity and implementation of a triage system in the ETU.

**Keywords:** Snake envenoming, AVS therapy, Door to needle time gap

# Dietary Adherence with Guideline Recommendations in Patients Undergoing Continuous Ambulatory Peritoneal Dialysis

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Dietary nutrient intake plays a dominant role in maintaining proper nutritional status in Continuous Ambulatory Peritoneal Dialysis (CAPD) patients. Adhering to multiple dietary restrictions imposed on CAPD patients may be difficult but crucial in maintaining proper nutritional status. The study aimed to assess the dietary adherence with renal specific European Society for Parenteral and Enteral Nutrition (ESPEN) guideline recommendations for CAPD patients. This cross-sectional study was carried out engaging 102 patients (66 were male) who attended to the CAPD clinic, at the General Hospital Kandy from January to April 2020. Participants were selected by simple random sampling method. Interviewer administrated food frequency questionnaire was used to collect dietary data. A small minority of the patients reached recommended targets of energy (30.4%) and protein (10.8%). The number of adherents to potassium and phosphorus was also as low as 10.8% and 17.6% respectively. Most of the participants consumed less than target recommendation in relation to potassium and phosphorus. Only 10.8% consumed sufficient fibre. Furthermore, only 26.5% were within the recommended dietary sodium targets and 20.6% of participants' sodium intake was higher than recommendations. It is generally accepted that dietary intake of CAPD patients is relatively lower than target recommendations. Majority of CAPD patients who participated in this study also did not meet current renal specific dietary recommendation in relation to all the selected dietary components. Therefore, other than conventional dietary counselling, nutritionally sound, appropriate dietary interventions should be implemented in order to improve adherence to recommended dietary intake to obtain the optimum results.

**Keywords:** CAPD, Adherence, Recommendations, ESPEN

# **Evaluation of Efficacy & Efficiency in Implementing Knee Ankle Foot Orthosis (KAFO) as a Functionally Assistive Indoor Ambulatory Device for Motor Complete Thoracic Level (T10 –T12) Spinal Cord Injury in Males**

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The objective was to evaluate walking velocity, walking endurance and energy expenditure in use of KAFOs over the alternative aluminum back slab and toe raising straps (ABS & TRS) on paraplegic (T10 –T12) ambulation which has not been performed among Sri Lankan patients. This was a case cross over study where fifteen, T10 – T12 motor complete paraplegic males who were practicing indoor ambulation with ABS and TRS and recommended to use KAFOs were recruited. A two weeks standardized ambulatory training was provided with either device prior to test. The 10 meter walk test, 6-minute walk test and physiological cost index (PCI) were used to assess walking velocity, walking endurance and energy expenditure respectively. Testing was done 6 weeks apart. A statistically significant difference was seen in walking velocity ( $z = -3.30$ ,  $p = 0.001$ ), with ABS and TRS having faster velocity. The walking endurance was significantly less ( $z = -3.41$ ,  $p = 0.001$ ), and energy expenditure was significantly high ( $z = -3.41$ ,  $p = 0.001$ ) with KAFOs relative to ABS and TRS. The results are closely compatible with previous studies, but remarkably differed with values of healthy individuals in normal ambulation. The walking velocity and the walking endurance of participants were relatively greater with less energy expenditure during ambulation with ABS and TRS. Therefore, it is concluded that KAFOs have less efficacy and efficiency as a functional indoor ambulatory device over ABS and TRS in rehabilitation of T10 –T12 paraplegic males.

**Keywords:** KAFOs, ABS and TRS, T10 – T12 paraplegics, Walking velocity, Walking endurance, Energy expenditure, 10 meter walk test, 6-minute walk test, Physiological cost index (PCI).



## Psychological Experiences of Parents having a Child with Cleft Lip and Palate

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Cleft Lip and Palate (CLP) is one of the most common congenital craniofacial conditions globally. Parents who are having Children with CLP are facing various types of experiences. A qualitative study was conducted to explore the parents' psychological experiences of having a child with CLP. Twenty parents who had been taking care of children with CLP for more than three months were purposively recruited for this phenomenological study. The study was conducted at the Dental Teaching Hospital, Peradeniya and ethical approval was obtained from the Faculty of Allied Health Sciences, University of Peradeniya. Data were collected using semi-structured interviews and data analysis was done using thematic analysis method. Three major themes emerged from the data as excessive sorrow, fear towards the surgery and coping with the child's birth defect. Not having the child that the parents expected to have, low body weight of the child and sadness towards child's future with CLP were perceived as reasons for excessive sorrow. Probable complication of the surgery and lack of knowledge regarding the surgery were reasons for fear towards the surgery. Follow up treatments and family supports helped parents to cope with the child's birth defect. These main negative and adverse sufferings as well as drawbacks help to understand several hidden unpleasant experiences of parents having a child with CLP. Hence, it is needed to ensure the importance of arranging social support services for these parents which are one of the neglected areas within the health care context of Sri Lanka.

**Keywords:** *Cleft Lip and Palate, Parents, Experiences*

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