



15TH INTERNATIONAL RESEARCH CONFERENCE

*Economic Revival, National Security, and Sustainability through
Advancement of Science, Technology, and Innovation*

29TH - 30TH SEPTEMBER 2022

MEDICINE

ABSTRACTS



GENERAL SIR JOHN KOTELAWALA DEFENCE UNIVERSITY



15TH INTERNATIONAL RESEARCH CONFERENCE

ECONOMIC REVIVAL, NATIONAL SECURITY, AND SUSTAINABILITY
THROUGH ADVANCEMENT OF SCIENCE, TECHNOLOGY, AND INNOVATION

MEDICINE

ABSTRACTS



General Sir John Kotelawala Defence University

Ratmalana, Sri Lanka

This book contains the abstracts of papers presented at the Medicine Session of the 15th International Research Conference of General Sir John Kotelawala Defence University, Ratmalana, Sri Lanka held on the 29th and 30th of September 2022. 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 Secretary, Ministry of Defence



I am indeed delighted to pen this message whilst extending my earnest felicitations to the KDU on this significant occasion of the annual International Research Conference. At this juncture, I would also like to congratulate the Vice-Chancellor and the team for continuing the tradition of organising this conference consecutively for the 15th time, despite the numerous economic and social challenges faced by the country in the post-COVID environment.

Further to that, I am delighted to perceive that this year's conference theme; 'Economic Revival, National Security, and Sustainability through Advancement of Science, Technology, and Innovation' focuses on the National Economic Growth and National Security as core concepts, and suggests that 'economic development' and 'security' of a country should always go hand in hand. Therefore, this conference would undoubtedly become a forum for academia to discuss an area of absolute need in the development interests of our motherland.

Moreover, I am pleased to witness 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 utilise to support the present development drive of the country. Further, I would like to urge the conference organisers to explore the possibility of distributing the outcomes of the conference to all the relevant Ministries and Departments of the country so that said entities could link with the researchers and employ their valuable research outcomes for the benefit of the nation.

I wish that KDU IRC 2022 will enhance the wisdom of all the participants to serve Mother Lanka for a better tomorrow.

GENERAL KAMAL GUNARATNE (Retd)

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

Message from the Keynote Speaker



It gives me immense pleasure to send this message on the occasion of the 15th International Research Conference of the General Sir John Kotelawala Defence University (KDU). I would like to congratulate KDU for being able to conduct its International Research Conference in 2022, consecutively for the 15th 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 and social and economic crisis. 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 “Economic Revival, National Security, and Sustainability through Advancement of Science, Technology, and Innovation,” 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 ‘economic revival’, ‘sustainability’ advancement’ 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 economic revival, national growth, sustainability 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 that the policy community in Sri Lanka could utilize for the benefit of the country. I wish this conference all the success.

HON PROF SUBRAMANIAN SWAMY

Former Minister of Commerce, Law & justice, India

Message from the Vice Chancellor



The International Research Conference (IRC) of General Sir John Kotelawala Defence University held for the 15th consecutive year is significant in terms of the continued contribution of the University to the field of research in diverse disciplines much needed for the progression of the nation, especially in the face of unprecedented challenges caused by the COVID-19 pandemic and the current economic crisis in the country.

The conference themes carefully selected by KDU each year have addressed contemporary needs of the country that are linked up with national security perspectives, and they are complementary to the development paradigm of the country. This year's theme "Economic Revival, National Security, and Sustainability through Advancement of Science, Technology, and Innovation" encompasses a wide range of research possibilities for scholars of different disciplines to engage in much useful research relevant to the current issues faced by the nation.

It is heartening to note that the number of papers submitted for the conference has increased despite the challenging circumstances, which is a positive indication of the enthusiasm growing in the country on development and security related multi-disciplinary research. In this respect, I am extremely glad that the KDU's efforts in expanding higher educational opportunities, increasing quality of higher education, enhancing research and innovation, linking up research with the industry and so on have increasingly been acknowledged by many, which is also reflected in the Times Higher Education Impact Ranking, 2022 table, where KDU has been ranked 2nd in Sri Lanka for Quality of Education and 4th in the overall ranking in the country and in the 801-1000 range globally.

KDU IRC also creates a sound platform to initiate collaborative research at both national and global levels, and I invite all participants to use this conference to make lasting and productive connections and networks at the individual, institutional, national, and international levels to envisage and explore mutually beneficial research possibilities and higher education experiences for the future.

While appreciating the commitment of the organizers of this year's conference, I wish you all, the presenters and participants taking part in the conference all the very best, and I hope you will enjoy every moment of this two-day academic endeavour.

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 15th consecutive year, General Sir John Kotelawala Defence University (KDU), organises its International Research Conference (KDU IRC 2022) under the theme of “Economic Revival, National Security, and Sustainability through Advancement of Science, Technology, and Innovation”. It is with great pleasure and honour that the organising committee extends its compliments to all of you taking part in KDU IRC 2022. Holding the KDU IRC 2022, under the patronage of the Vice Chancellor, amidst many challenges encountered throughout the year, was a remarkable experience for me. I believe that the organising committee accomplished a very successful mission.

Despite the economic crisis, KDU IRC 2022 is a tremendous opening for many 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; Computing; Criminal Justice and Technology to present their research to fellow scholars, professionals, and students.

In this context, we have assembled excellent thought-provoking scientific sessions under the conference theme of this year, and it is remarkable to highlight your participation, at this conference through a highly competitive selection process. In addition, world-renowned invited speakers will deliver keynote and plenary speeches while covering a wide range of important sessions with great networking opportunities and providing solutions using science, technology, and innovation. It is the esteem of the conference to bring together a diverse group of people to disseminate high-quality and novel research results, which will assist to chart our journey forward to reach new heights.

Finally, I would like to extend my best wishes to all the presenters, authors and participants, joining the KDU IRC 2022 on site or online, and I hope that all of you will find this conference informative, enjoyable, and encouraging to feel the experience of KDU hospitality during these two fruitful days.

DR KALPA W SAMARAKOON

PhD, MSc, BSc, MACS (USA), M.I.Biol (SL), C.Biol (SL)
Conference Chair
General Sir John Kotelawala Defence University

Message from the Conference Secretary



Together with the committees and participating academia of this university, I share the immense pleasure and honour of perseverance with the 15th International Research Conference of KDU (KDU IRC 2022), amidst many challenges, under the patronage of our Vice Chancellor and Deputy Vice Chancellor.

The timely congregation for IRC 2022, of all our staff, students and contributors from faculties all over the world, under the theme “Economic Revival, National Security, and Sustainability through Advancement of Science, Technology, and Innovation”, is of paramount importance in this current climate of the global recession.

Whilst thanking all of you, I express my sincere hope that this would be an ideal platform for academia and professionals to discuss economically viable intelligent solutions for diverse problems for the nation to emerge stronger out of the recession, with the ability to provide equitable health, food, and social security, quality education, and enforcement of law and order in our country, for the betterment of our society.

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ORAL PRESENTATIONS

Ayurveda Intervention of the Management on Dvajabhanga wsr Erectile Dysfunction: A Systematic Review

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Ayurveda classical texts have mentioned that Dvajabhanga can be correlated with Erectile Dysfunction (ED) in modern medicine. In this study the PICO model was used to formulate the research question. This systematic review was conducted as per the PRISMA- P guidelines. The terms ED, Dvajabhanga, Klaibya and Shukra Dushti were used in searching without narrowing or limiting search elements. Accordingly, clinical trials, case series, case reports were included and ED patients aged between 18 to 70 years were diagnosed, irrespective of ethnicity and marital status, with or without diabetes mellitus, psychogenic ED, obesity were included in this study. At the end of the selection process, 23 research articles Including 9 clinical studies and 14 review articles were selected Clinical trials have been conducted for diagnosed ED patients and selected treatment modalities were as follows: Shodhana, Shamana, Shodhana with Shamana, External applications, and Uttarabasti. Among the clinical studies, Shamana (Rasayana Drugs) followed by Shodhana may show a better result than only Shamana treatment. Kaminimadvidhunan Ras and Pramehamihir Tail Matra Basti have a significant effect in treating ED due to diabetes. Kapikacchu Churna (black seeds) has shown a highly significant increase in erectile function and sexual desire. The results of the 14 review articles recommended suitably combined treatment options as a general line of treatment for Dvajabhanga – Purification therapy: Snehayukta Virechana, Asthapana and Anuvasana, Vrishya yogas. In addition, Uttarabasti is recommended as a local treatment for ED. It can be concluded that Panchakarma with internal medicine treatments was observed to have better results for ED with or without Diabetes Mellitus than only internal medicine.

Keywords: *erectile dysfunction, Dvajabhanga, Klaibya, Shodana, Shamana*

Assessment of Knowledge and Clinical Skills for Minimum Image Set in POCUS for Efast and Lung Scan among Sri Lankan Emergency Medicine Trainees

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Point of care ultrasound (POCUS) is used by clinicians to answer specific questions to expedite emergency care until a comprehensive assessment can be done. Minimal image set in POCUS is considered the most critical feature and this study aims to assess the knowledge required for minimum image set for EFAST and lung ultrasound among Emergency Medicine (EM) trainees. This is a descriptive cross-sectional study, conducted among 97 Specialist Trainees in Emergency Medicine, at the Post Graduate Institute of Medicine (PGIM), Sri Lanka. Data was collected using a self-administered online questionnaire via a set of multiple-choice questions at the PGIM and was analyzed by a descriptive and analytical statistical method using IBM SPSS Version 20 software. Ethical approval was granted by the ethical review committee of National Hospital Sri Lanka. Most of the participants had more than a year of experience in POCUS and had followed reputed ultrasound programmes such as WINFOCUS (62.8%). Furthermore, 15.3% of the participants had international accreditation and 37.1% knew minimal image concepts. However, only 25% of the trainees had a good knowledge of minimal image concepts and 83.3% of them had followed a reputed programme. The study concluded that there is no clear relationship between the level of training and the knowledge, nevertheless, the type of reputed courses (WINFOCUS) and level of knowledge have a visible relationship. Overall, there is poor knowledge among the participants regarding a protocolized approach to POCUS.

Keywords: *knowledge, clinical skills, lung scan, emergency medicine*

Integrating Mindfulness Based Techniques into Cognitive Behaviour Therapy (CBT) for Obsessive-Compulsive Disorder (OCD): A Case Description

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Sam was a patient admitted to the psychiatry department of a tertiary care hospital due to the worsening of his OCD symptoms. He had been to many psychiatrists and psychotherapists for close to six years. His OCD symptoms were not reducing adequately in response to the treatments he was receiving. At the hospital he was offered standard CBT, in accordance with the current treatment recommendations. Yet as Sam found it difficult to engage in CBT, the therapist decided to integrate a few mindfulness techniques into the standard treatment protocol of CBT. This helped Sam reduce his anxiety levels successfully and engage in CBT exercises. This eventually helped the symptoms to be managed to the extent that he could be discharged from the ward. The current paper expects to discuss how the mindfulness techniques were integrated to standard CBT. As this paper is based on a case description, the authors recommend that systematic research be carried out to arrive at conclusive evidence on the utility of integrating mindfulness techniques in CBT for patients with OCD.

Keywords: *OCD, CBT, mindfulness*

Fasting and Surgery Timing Audit in a Base Hospital in Sri Lanka

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Prolonged fasting can lead to many complications apart from patient discomfort such as dehydration, electrolyte imbalance, delayed recovery, postoperative nausea and vomiting and poor patient outcome. This study was aimed at assessing the adherence to the standard guidelines proposed by the American Society of Anaesthesiologists for fasting patients, awaiting routine surgery. Data was collected using a questionnaire from patients awaiting routine surgery at a Base Hospital in Sri Lanka over a 10 days' period and analysed. Of the 104 surgical patients 76% (n=80) were females. There were 36 (34.6%) general surgical, 49 (47%) obstetric, 18 (17.3%) gynaecological and 1 (0.9%) ophthalmological surgeries. The average fasting period for solids in all surgeries was 12.7 hours and that for clear liquids was 7.7 hours. The average fasting periods for solids were 13, 13.7 and 12.1 hours in general surgical, gynaecological and obstetric patients respectively. The average fasting durations for clear liquids were 9.9, 7.8 and 5.9 hours in general surgical, gynaecological and obstetric patients respectively. Sixty-six (63%) patients were kept fasting for solids 12 hours or more. Seventy-nine (75.9%) were kept fasting for clear liquids double the time recommended. Regardless of the international and local fasting guidelines patients are kept fasting for solid food and clear liquids for a significantly longer period than expected. It implies that there should be more planning regarding timing of surgery by both surgical and anaesthetic teams.

Keywords: *clear liquids, fasting, guidelines, solids*

Physical Activity and Associated Factors on Work-Related Stress of Bank Officers in a Government Bank in Colombo, Sri Lanka

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Stress is the feeling of being overwhelmed or being unable to cope with mental, and emotional pressure. Employment in a bank can be stressful due to increased screen time, feeling of confinement and uniformity during work. The objective of this study was to identify the work-related stress levels, its association with physical activity and other factors among the employees of a selected government bank in Colombo, Sri Lanka. This was a cross sectional study with an analytical component. Convenient sampling was used to select 110 participants. International Physical Activity Questionnaire (IPAQ) and Job Content Questionnaire (JCQ) with some modifications were administered online to collect sociodemographic, work-related stress, physical activity and other data. Response rate was 95.5% (n=105). A high work-related stress was seen in a greater majority (74.3%, n=78) of bank employees. More than half of the participants (52.3%, n =55) had a low physical activity level and one third (33.3%, n=35) had a high physical activity level. A statistical significance was not seen between the sociodemographic characteristics and the level of work-related stress. Level of physical activity (p=0.609), average sitting time (p=0.080), supervisor (p=0.747) or co-worker support (p=0.314) didn't seem to be associated with work-related stress. Majority of bank employees are suffering from work-related stress. Though none of the factors seemed to be statistically associated with work-related stress, many had a low level of physical activity. Further evidence is required to explore the relationship between physical activity and work-related stress and to identify other related factors.

Keywords: *work-related stress, physical activity, sitting time, social support, bank employees*

Sexual Dimorphism in Sri Lankan Saw Scaled Viper Based on the Mensural and Pholidosis Characters

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Sri Lankan SSV was recorded as a sub species of *Echis carinatus* named as *Echis carinatus Sinhaleyus* by Deraniyagala in 1951. The study aimed to explore the sexual dimorphism in Sri Lankan saw scaled viper based on the mensural and pholidosis characters. A total number of 30 adult specimens were collected from the Northern Sri Lanka. In order to determine the sexual dimorphism, 12 mensural, 12 pholidosis and three body colour pattern characters of the male and female specimens were recorded and statistically analysed. The mean rostrum-anus length (RA) of the male was 240.9mm (range 187-280 mm) and the female was 280.3 mm (range 195-354mm). The median tail length (TL) of the male and female specimens was 33.4 mm (range 28-40 mm) and 29.7mm (range 20-36 mm) respectively. Non parametric analysis of covariance confirms that there are statistically significant differences in the RA ($p= 0.006$) and the TL between the male and the females ($p = 0.028$) which derives a positive value in sexual size dimorphism index, confirming that females are larger than males (1.004). The meristic traits appeared to be less variable between male and female except the ventral and sub caudal scales which revealed that the females have high number of ventral scales (145.8 ± 3.3) than the males (138.4 ± 4.07) and males have a greater number of sub caudal scales (28.9 ± 1.85) than females (25.8 ± 2.8) which is proportional to the length. All the other studied mensural and meristic characters showed complete blending between male and female.

Keywords: Sri Lanka, saw scaled viper, sexual dimorphism

Evaluating Bioequivalence of Two Formulations of Metformin Hydrochloride US 500 mg XR Oral Tablets under Fasting Conditions in Healthy Sri Lankan Subjects

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The WHO mandates therapeutic interchangeability of multi-source oral medicines with the respective innovator be proven either by bioequivalence (BE) or biowaiver. This study aimed to evaluate the bioequivalence of two generic Metformin hydrochloride (MET) USP XR 500 mg oral tablets (CIC Lifesciences Ltd., Sri Lanka) with the innovator Glucophage XR 500 mg (Merck Sante S A S, France) in a randomized, two-treatment, two-period, two-sequence, open-label, single-dose, crossover trial under fasting conditions with one-week washout period. Eighteen healthy subjects were recruited, and seventeen blood samples (4 mL each) were withdrawn from each subject at different time points (0, 1, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 7, 8, 10, 12, 16, 24 h) after administration of single dose of 1000 mg (500 mg x 2). Reverse-Phase High-Performance Liquid Chromatography (RP-HPLC) UV spectrophotometric validated method with a mobile phase consisted of Acetonitrile: water (25:75) with 20 mM of KH₂PO₄. Detection of metformin and internal standard Ranitidine were done at 230 nm. Pharmacokinetic parameters C_{max}, T_{max}, area under the plasma concentration-time curve zero-infinity (AUC_{0-∞}), AUC_{0-t}, were evaluated statistically using PKMP version 1.03.28. The 90% confidence intervals for (test/reference) of C_{max}, T_{max}, AUC_{0-∞}, AUC_(0-t) were 96.88%-100.64%, 101.3%-108.871%, 103.39%-109.75% and 103.39%-109.75% respectively that fall within the recommended confidence interval (i.e., between 80-120%). The extent of absorption (AUC_{0-∞} and AUC_{0-t}) and the rate of absorption (C_{max} and T_{max}) were not significantly different. Therefore, MET USP XR 500 mg oral tablet generic CIC can be therapeutically interchangeable with innovator drug in clinical practice.

Keywords: *bioequivalence, Metformin hydrochloride USP XR, Sri Lanka, single dose*

Knowledge, Attitudes, Self-Reported Adherence to Antibiotics and Their Associated Factors among Undergraduate University Students in Sri Lanka: An Online Survey

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Antibiotic resistance (ABR) occurs when bacteria change in response to the use of antibiotics. These bacteria become resistant to antibiotics and may infect humans and animals. Therefore, present descriptive cross-sectional online-based survey aimed to determine the knowledge, attitudes and self-reported adherence to antibiotics among the university students (n=250) of Sri Lanka. A pretested interviewer administered questionnaire was used for collecting data from January 2021 to December 2021. Processing and analysis of data were performed using SPSS statistic software package version 25. Study findings revealed that the general knowledge, attitudes and self-reported adherence to antibiotics among the undergraduate university students were satisfactory, with good knowledge, attitudes and self-reported adherence being 49.4%, 45.5% and 48.6% respectively. Present study revealed a significant association between knowledge and sociodemographic factors such as gender (t= -3.338; p= 0.001), field of study (t = 5.797; p < 0.001) and A/L stream (t= 10.649; p < 0.001). Gender (t= -2.904, p = 0.004), A/L stream (t= -2.903; p= 0.004) and higher education attainment of the mother (t = -2.233; p = 0.026) were significantly associated with improved attitudes. Additionally, significant association was shown between adherence and sociodemographic factors such as field of study (t value= 3.537; p value < 0.001) and A/L stream (t value = 5.907; p value < 0.001). As more than half the population had inadequate knowledge, attitudes and adherence, multifaceted intervention programmes should be done targeting the public, policymakers and pharmacies to determine the best and most successful intervention to enhance the adherence of antibiotics among the individuals of Sri Lanka and to reduce ABR.

Keywords: *bacteria, education, resistance, public, sociodemographic*

Association of Sociocultural and Demographic Factors on Attitudes of Teaching Sexual and Reproductive Health in Science and Health Science Teachers in Dehiowita Educational Zone in Kegalle District, Sri Lanka

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School based reproductive health education depends on teachers, students and other factors related to schools. Factors related to teachers can be assessed through knowledge, attitudes and practice of them. A descriptive cross-sectional study was carried out among grade six to eleven science and health science teachers in secondary schools to assess their attitudes related to teaching reproductive health. Data were collected through self-administered questionnaire among science teachers (n=270) in Dehiowita educational zone in Kegalle district, Sri Lanka during January 2022 to March 2022. Attitudes were described as positive or negative related to positive or negative statements towards good attitude. 51.7% of teachers had a positive attitude towards the statement, "Reproductive health education is appropriate for your students", 24.6% of teachers had negative attitudes. 54% disagreed on the potential impact on our value system by teaching sexuality related topics. Interestingly, 25% did not show a positive or negative attitude regarding the statement. Study findings concluded that 49.7% (majority) of the teachers believed that the biggest barrier to reproductive health education is culture and 28% of them thought that parents are the biggest barrier. 16.7% of them thought school policy is responsible and only 5.6% of them said it is due to lack of training. Study results revealed that the socio demographic factors such as age, marital status and type of school were significantly associated with the attitudes related to teaching reproductive health. The association between religion being a barrier to sex education was not statistically significant ($P=0.318$, $\chi^2=9.29$, $df=8$) and the association between residence and statement "Society does not accept teaching reproductive health" was not statistically significant ($P=0.058$, $\chi^2=5.688$, $df=2$). Further, 50.4% of Buddhist and 43% of Hindu teachers suggested that culture was the major limitation on teaching reproductive health. Negative attitudes have appeared among teachers on teaching reproductive health and positive attitudes were not fully expressed. Therefore, attitudes towards teaching reproductive health have to be improved among school teachers.

Keywords: *attitude, health, reproductive, sociocultural*

Circulating Dengue Strains During the Covid 19 Pandemic in the Western Province of Sri Lanka

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Dengue has been considered endemic to Sri Lanka since 1989 with regular dengue epidemics. We sought to identify the dengue strains and the circulating serotypes from July 2019 to December 2021. 299 consenting patients presenting with febrile illness were recruited from the medical wards at Colombo North Teaching Hospital (CNTH), National Institute for Infectious Diseases (NIID), and University Hospital- Kotelawala Defence University (UH-KDU) of the western province. All samples were tested by Reverse transcriptase-polymerase chain reactions (RT-PCR) and/or real-time-PCR tests to determine dengue positivity and serotype. Sequencing (NGS) was carried out on samples with adequate viral load ($Ct \leq 22$) followed by phylogenetic analysis using the Geneious software. The testing showed that 51% were positive for the dengue virus. The serotyping showed that 12% of the positives were DENV-1, 45% DENV-2, 40% DENV-3, and 3% DENV-4 respectively. Phylogenetic analysis of sequenced samples showed two genotypically distinct variants of the DENV-3 as well as DENV-1. One DENV-3 variant was similar to those reported in 2017/18 in Sri Lanka while the other was similar to the one reported in India, in 2016/18. One DENV-1 variant was similar to the 2018 strain found in Sri Lanka while the other was similar to the variant reported in China in 2014/16. Phylogenetic analysis of DENV-2 sequences showed one cluster of a similar genotype reported in 2017/18. DENV4 is yet to be sequenced. Our data suggest that during the study period multiple strains have been circulating in the western province even though no serious epidemic was reported.

Keywords: dengue, serotypes, phylogenetic, DENV-1, DENV-2, DENV-3

Melioidosis: A Deadly Disease Mimicking Leptospirosis Reported from a Highly Endemic Area of Sri Lanka

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Melioidosis is endemic in Sri Lanka. We present a case of melioidosis which led to diagnostic confusion and an unfavourable outcome. A 53-year-old paddy farmer from Kurunegala was admitted to the University Hospital, KDU with fever, myalgia, arthralgia, headache, and loss of appetite for 1 week. He was a diabetic with poor glycaemic control and had engaged in farming during the preceding month. On examination, he was febrile, dyspnoeic and had multiple abrasions on both feet. His temperature was 101° F, blood pressure 180/110mm Hg, respiratory rate 40/min, heart rate 118/min, SpO₂ 78%, blood lactate 2.4mm/L and creatinine 2.1mg/dL with acute kidney injury on admission. Clinical suspicion of sepsis following leptospirosis was made, ceftriaxone 2g daily was started after taking blood for cultures and leptospira studies and was transferred to the ICU. The patient rapidly desaturated and went into septic shock requiring maximum inotrope and ventilatory support. On the following day blood cultures flagged positive for a Gram-negative bacillus and ceftriaxone was changed to meropenem. Patient deteriorated rapidly with refractory shock and persistent hypoxemia and died within 48 hours. A non-lactose fermenting bacterium, resistant to aminoglycosides and colistin was isolated and a probable diagnosis of melioidosis was made. Isolate was confirmed as *Burkholderia pseudomallei* using a specific latex agglutination test and *lpxO* Real-Time PCR assay. Genotyping revealed isolate belongs to Yersinia-like fimbrial (YLF) group which carry bimABp allele variant. Leptospirosis micro agglutination test was negative. Melioidosis may mimic leptospirosis. However, the antibiotics prescribed for leptospirosis are ineffective in the treatment of melioidosis. Therefore, melioidosis should be a differential diagnosis in patients with acute sepsis from highly endemic areas.

Keywords: *melioidosis, leptospirosis, deadly disease*

Complete Genome Sequencing and Phylogenetic Analysis of Dengue Type 1 Isolated from Sri Lanka from 1983-2014

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Sri Lanka faces regular outbreaks of dengue and from 1989 onwards dengue became endemic to the country. All four serotypes of dengue have been recorded, and the outbreak of dengue virus 1 (DENV 1) in 2009 resulted in the largest epidemic recorded up to that point. This raised the question of whether a significant genetic mutation had increased the transmissibility and virulence of DENV1. Hence, this research focused on studying the genetic/phylogenetic differences of DENV1 found in Sri Lanka from 1983 to 2014. To determine the genetic diversity of DENV 1 circulating in Sri Lanka within this period we conducted a genome-wide analysis using sanger sequencing and next-generation sequencing, followed by phylogenetic and amino acid analyses. The results showed a single dominant strain of DENV1 circulating in Sri Lanka after 2009 and almost all strains isolated after 2009 were of this genotype. The pre-2009 strains were different from the post-2009 strains and coincided with the largest epidemic in Sri Lanka. Our analysis of the phylogenetic tree and the amino acid substitutions generated by these two groups shows a clear difference. We conclude that these differences may contribute to the severe epidemic that was seen in 2009.

Keywords: DENV1, 2009, phylogenetic analysis, amino acid substitutions

Comparative Evaluation of Antibiotic Resistant Alert Organisms Detected from COVID-19 and non-COVID-19 Patients during Pandemic and Pre-Pandemic Era

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Antibiotic resistant alert organism surveillance is essential for early prediction of outbreaks, timely investigation, and for implementation of control measures. The aim was to compare the rates of seven specified antibiotic resistant alert organisms during COVID-19 pandemic and pre-pandemic era at University Hospital KDU. Laboratory records from July to December during the years 2019 and 2021 were scrutinized. Three groups were identified: Group 01- COVID 19 patients, Group 02 – non-COVID-19 patients in pandemic era, and Group 03 – non-COVID-19 patients in the pre-pandemic era. A total of 501 alert organisms belonging to seven groups were analyzed. *Staphylococcus aureus* (n=12,79,60), *Enterobacteriaceae* (n=162,388,296), *Pseudomonas* (n=63,83,74), *Enterococcus* (n=41,40,14) and *Acinetobacter* (n=91,35,31) were isolated from the three groups. Methicillin Resistant *Staphylococcus aureus* (MRSA) rates were 83.3%,34.2%,56.7% while ESBL producing *Enterobacteriaceae* were 19.7%,18.8%,28.7%, Carbapenem resistant *Enterobacteriaceae* (CRE) were 33.3%,4.4%,4.4%, Carbapenem Resistant *Pseudomonas* (CRP) were 20.6%,16.9%,10.8%, Vancomycin resistant *Enterococcus* (VRE) were 26.8%,15%,35.7%, multidrug resistant *Acinetobacter* were 49.5%, 54.3%, 48.4% and the colistin resistant organisms (CRO) were 4.8%, 0.42%, 0% respectively in group 1,2 and 3. Statistically significant higher rates of alert organisms were found in group 01 compared to group 02 (P<0.05), while no statistically significant differences were observed between samples of group 01 and group 03 (P=0.11) or group 02 and 03 (P=0.12). Increased rates were observed for CRE and CRO in Group 1 when compared to Group 2 and 3. Challenges faced in implementing, infection prevention precautions and antibiotic stewardship measures during the pandemic may have contributed to these observations.

Keywords: Covid 19, MRSA, CRP, pandemic

Antibiotic Sensitivity of Uropathogens to First Line Antibiotics: A Laboratory-Based Analysis from a University Hospital in Sri Lanka

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Outpatient treatment of urinary tract infections is compromised due to rapid development of resistance to first line antimicrobials leading to increased healthcare cost. Continuous resistance surveillance is important when making empiric therapy decisions. This study aimed to determine the antibiotic sensitivity rates of uropathogens to first line antibiotics. Urine cultures received to the microbiology laboratory at University Hospital KDU from January to June 2022 were retrospectively analyzed. Of 2626 specimens 431(16.4%) yielded significant bacteriuria. Commonest organism from outpatients were Enterobacterales, (122/150,81.3%) followed by Staphylococcus species (8/150,5.3%), and among inward patients, Enterobacterales (152/227,66.9%), were commonest followed by Candida (33/227, 14.5%) Enterococcus (17/227, 7.4%) and Pseudomonas (8/227, 3.5%) while Candida (31/54, 57.4%) was the commonest among ICU patients. Antibiotic sensitivity of Enterobacterales to first line antibiotics among outpatients, inward and ICU patients were: gentamicin (83.6%,85.6%,40%), nitrofurantoin (78.4%,75%,40%), cefuroxime (76.7%,65.4%,20%), cephalexin (68.5%,58.8%,20%), norfloxacin (67.8%,53.1%,0%), co-trimoxazole (67%,56.8%,0%), co-amoxiclav (66.1%,59.2%,20%), ciprofloxacin (58.5%,42.8%,0%), nalidixic acid (48.2%,38.6%,0%), and amoxicillin (20%,24.2%,20%), respectively. Overall sensitivity of pseudomonas species to ceftazidime (83.3%,50%), gentamicin (83.3%, 25%), norfloxacin (67.7%,25%), ciprofloxacin (66.7%,25%) and were observed in inward and ICU patients while vancomycin resistance was detected as 71.4% and 67% to enterococci respectively. Nitrofurantoin can be considered as a first line oral option for both outpatients and inward patients, but its use is limited to cystitis. Gentamicin is another option to be used as a single agent or in combination, for inpatient treatment or as outpatient parenteral therapy. Effectiveness of many other first line oral antibiotics as step down therapy has become low especially among ICU patients.

Keywords: antibiotic sensitivity, uropathogens, first line antibiotics, Sri Lanka

High Fluoride Exposure may be Associated with Subclinical Renal Injury in Normoalbuminuric Children: A Case Study in Padavi Sripura, Sri Lanka

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High Fluoride exposure levels are supposed to be a risk factor for renal injury and chronic kidney disease of uncertain etiology (CKDu). However, fluoride exposure and its impact on renal health are not well understood in Sri Lanka, particularly among children. Hence the study aimed for a comparative assessment of renal health in children with high and low fluoride exposure. This cross-sectional study was conducted with the voluntary participation of 92 students of both sexes (12-17 years of age) in the CKDu endemic, Padavi Sripura education zone. Early morning midstream urine samples were analysed, and urinary albumin-creatinine ratio (ACR) and creatinine-adjusted urinary fluoride (UF) levels were used for interpretations. UF levels above the 75th percentile of their UF distributions were categorized to the high fluoride exposure group (Hex) while the others occupied the low-fluoride exposure group (Lex). The median (inter-quartile distance) UF levels of girls and boys were 1.301 (0.960-2.391) and 1.908 (1.278-3.524) mg/gCr respectively. The median ACR level (mg/g) of boys in Hex [3.696 (2.096-7.236)] was significantly higher ($p < 0.0001$) than that of the boys in Lex [1.233 (0.746-1.814)]. Girls in the Hex reported significantly higher ($p < 0.0001$) ACR [4.008 (2.697-5.573) mg/g] compared to the girls in Lex [1.576 (1.273-2.390) mg/g]. UF showed significant associations with urinary ACR in boys ($r = 0.718$, $p < 0.0001$) and in girls ($r = 0.712$, $p < 0.0001$). The participants were normoalbuminuric ($ACR \leq 30$ mg/g), and the significant elevation of ACR with increasing fluoride exposure rendered a potential risk of renal injury. Longitudinal studies are recommended to explore these associations in depth.

Keywords: fluoride, paediatric, kidney injury, biomarkers

POSTER PRESENTATIONS

Activation of Latent Melioidosis Infection in an Immunocompromised Patient: A Case Report

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Melioidosis causes suppurative infection with local abscesses and the reservoirs of the organism; *Burkholderia pseudomallei* are soil, fresh water and paddy fields. The diagnosis is made by isolating the organism through culture and microscopy. Treatment includes an intensive course of intravenous and oral antibiotics which spans over 3 months. A 62-year-old patient from Kurunegala, with a background history of diabetes mellitus, hypertension, dyslipidaemia, presented with left lower limb pain and ankle swelling for 6 weeks' duration. He was previously treated with methotrexate for chronic plaque psoriasis. The cause for was diagnosed as occlusive arterial disease and deep vein thrombosis of left lower limb and the treatment was started accordingly. During the hospital stay, he developed septic shock with several episodes of diarrhea and underwent septic screening. His blood culture was positive for *Burkholderia* and was confirmed with serological assessment done at Faculty of Medicine, University of Colombo. The patient had worked in paddy fields 6 months prior to this presentation. Following the diagnosis through multi-disciplinary approach, the targeted treatment was started with intravenous ceftazidime and oral metronidazole. Although the patient showed some response to initial treatment, he succumbed to the illness due to the complications of his underlying comorbidities. In conclusion, active melioidosis during immunocompromised states can cause a severe infection, and it is crucial to have a clinical suspicion in relation to the epidemiology and clinical course of the infection while managing the underlying comorbidities.

Keywords: *Burkholderia pseudomallei, melioidosis, immunocompromised-state*

Decompression Sickness, Intervention Study on Clinical Features of Two Study Samples Treated in a Single Hyperbaric Unit at Naval Hospital Trincomalee, Sri Lanka

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Decompression sickness (DCS) is a 100% treatable occupational health hazard related to diving activities. Physiopathology is bubbles forming in tissue or blood from dissolved Nitrogen on ascent if time and/or depth of dive are too rapid. The Trincomalee Navy hospital has a hyperbaric medicine facility in Sri Lanka. The first study sample included 21[males] in year 2006 and the second study sample included 26 cases treated from January 2010 to June 2014. The first sample included 100% DCS type 2 patients, and 86.95% of DCS type 2 cases were there in the second sample. The mean age of the second sample was 43.8 years. 100% male divers in the first sample and one female in the second sample diving at Maldives [type1, diving depth 18m]. Cases of second sample had a mean bottom time of 69.5 minutes, and 57.14% of cases had more than 01hour total time. The mean diving depth of the second sample was reported as 62.95m. The initial symptom of all cases in the first sample occurred within 6 hours after surfacing in all cases and reached to recompression treatment 6 to 72 hrs. 76.2% cases were in age 40-50 and the rest were in 50-60 age group.

Keywords: *decompression, physiopathology, hyperbaric*

The Utility of Rotational Thromboelastometry (ROTEM) in Identifying Envenomation Following Cobra Bites

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The cobra is one of the highly venomous snakes in Sri Lanka. Cobra bites are not known to cause haemato-toxicity, except in some studies that have shown a transient coagulopathy by non-clotting 20-minute Whole Blood Clotting Test (WBCT20). Despite this, and its low sensitivity, WBCT20 is routinely used as the standard test to detect envenoming in patients following cobra bites. We investigated the usefulness, sensitivity and specificity of using ROTEM parameters compared to WBCT20 in identifying the coagulopathy of cobra bites. Seven (7) cobra bite patients were recruited as a part of larger study which was composed of Russell's viper, hump-nosed viper, common krait and non-venomous snakebite patients. Details of their clinical presentation, prothrombin time, WBCT20 and ROTEM were performed at presentation. All patients had neurological manifestations, yet none had clinically significant bleeding. All 7 cobra bite patients showed a clotted WBCT20, however, 6 patients showed an abnormality in ROTEM; prolongation of either EXTEM-CT, FIBTEM-MCF or both. EXTEM-CT showed a higher sensitivity (83%), accuracy (71%) and PPV (83%) in identifying cobra envenoming compared with WBCT20. Anti-venom serum was administered in 6 of the 7 patients in spite of clotted WBCT20s. In conclusion, ROTEM parameters were more likely to pick up subtle changes in coagulation and thereby envenomation, compared to WBCT20. The clinical utility of detecting abnormalities in ROTEM parameters and their usefulness in managing patients with cobra bite should be explored further.

Keywords: cobra, coagulopathy, rotational thromboelastometry, WBCT20

Stem Cell Manipulation with Plasmid-Based Transcription Factor Over-Expression Systems to Successfully Generate Pre-Specified Cells Fates *in-vitro*; Proof of Concept of *in-vitro* Stem Cell Fate Reprogramming Using cDNA Vectors

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The differentiation of stem cells in a controlled fashion is essential to achieve a predefined daughter cell types required for research or regenerative therapies. Transcription factors play a key role in switching cellular differentiation fate *in-vivo*, at the initiation of the neuro or glial cell fate specification phase in rodents and humans. The study aimed to assess if stem cell differentiation can experimentally be manipulated using expression of cDNA of regulatory homeodomain transcription factors Olig2, Nkx2,2, or Ngn2 *in-vitro* mirroring the *in-vivo* development. Mouse embryonic stem (ES) cells and human foetal neural stem (FNS) cells were cultured according to standard protocol. pIRES plasmid vector system with Olig2 transcription factor expression, with or without the co-transcription factor Nkx2.2 (or Ngn 2), were created using molecular biological techniques and introduced into differentiating stem cells. Using biomarkers, final cell fates were compared with one another, including a placebo version. Both mouse embryonic and human neural precursor cells can be made to prematurely differentiate towards neuroglial fate with forced expression of Olig2 transcription factor, whereas co-expression of Olig2 and Nkx2.2 leads to premature oligodendroglial fate specification, compared to placebo. The quantitative effect of fate switching was marked with embryonic stem cell differentiation. Forced expression of key transcription factors as illustrated, may be an attractive method to control stem cell fate modification in *in-vitro*, and this may successfully be used to generate rare live human cells (such as Oligodendroglia or other specialized cells) for further experiments.

Keywords: *stem cell re-programming, fate modulation, transcription factors*

Knowledge and Selected Practices of Paid Bystanders Regarding Patient Care and Personal Protection in Colombo-North Teaching Hospital, Ragama, Sri Lanka

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The dearth of studies on paid bystanders who figure prominently in caregiving for inward patients in Sri Lankan hospitals led us to assess their knowledge and selected practices regarding patient care and personal protection, to aid their professional improvement. Ninety-two participants were cross-sectionally assessed, using an interviewer-administered questionnaire at Colombo-North Teaching Hospital (CNTH), a main referral centre in Sri Lanka. The median scores of the reference group comprising 15 nurses from CNTH were compared with that of the participants to determine the adequacy of knowledge and practices regarding patient care and personal protection. $p < 0.05$ was considered statistically significant. Females preponderate ($n=64$, 58.9%), 80 participants (86.7%) worked for a private agency and others were self-employed. Despite, 37 participants (40%) having a work experience of more than 3 years, the adequacy of knowledge regarding personal protection ($n=24$, 25.6%), and patient care ($n=2$, 2.2%) were very low. None of the participants had adequate practices regarding personal protection, and it was 34 (36.7%) for patient care. However, participants with longer durations of experience had better practices ($p < 0.001$), knowledge ($p < 0.001$) regarding patient care, and better practices regarding personal protection ($p < 0.001$). Those who were more educated had better practices regarding personal protection ($p=0.014$). As the knowledge and practices of paid bystanders regarding patient care and personal protection are unsatisfactory but are relatively higher in more experienced and more educated ones, a standard minimum period of training and a minimum level of education are recommended before employment.

Keywords: *paid bystanders, patient care, personal protection*

Cytotoxic Effects of *Syzygium aromaticum* Leaf Extract against *Aedes albopictus* Cells

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Syzygium aromaticum consists of anti-microbial and anti-parasitic activity. *S. aromaticum* is rich in many phytochemicals such as eugenol, terpenes, and phenolic compounds. In this research, we tested the cytotoxicity of *S. aromaticum* in *Aedes albopictus* (C6/36) cells using the CytoTox 96® Non-radioactive cytotoxicity assay. This is a colorimetric assay that quantitatively measures lactate dehydrogenase, a stable cytosolic enzyme released upon cell lysis. *S. aromaticum* leaf extract was prepared in a two-fold dilution series. Two 96-well plates were prepared with C6/36 cells, and the assay was set up with analytical system based negative control - without C6/36 cells, vehicle control - untreated cells, positive control - lysis solution with four replicates. *S. aromaticum* extract was added to the test wells at different concentrations, one plate was incubated for 5 hours, and the next plate was incubated for 24 hours at 28° C. The absorbance data were measured using a standard 96-well plate reader (Labtech LT-4500, Singapore) and the percentage of cytotoxicity was calculated for each of the concentrations tested. The colour intensity and absorbance values decreased with the decreasing concentrations of *S. aromaticum* leaf extract. High concentrations of *S. aromaticum* extract caused high number of cell lysis. High concentrations of *S. aromaticum* leaf extracts were cytotoxic to C6/36 cells at dilutions >1/128. Cytotoxicity data of *S. aromaticum* leaf extracts help to select the minimum toxic concentrations for testing the anti-*Aedes* inhibitory activity of the product. The data corroborated with the larvicidal activity of *S. aromaticum* leaf extract against *Aedes* larvae.

Keywords: cytotoxicity, *Syzygium aromaticum* leaf extract, cell lysis, colour intensity

Knowledge, Practices, and Self-Reported Symptoms of Menstrual Irregularities among Female University Students in Sri Lanka: An Online Cross-Sectional Study

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Menstrual irregularities are important in terms of female reproductive health. However, it is poorly addressed in developing countries like Sri Lanka especially in school level and above. The present descriptive cross-sectional study was conducted to assess knowledge, practices, and self-reported symptoms of menstrual irregularities among the female university students (n=280) in Sri Lanka. Data collection was performed during January 2021 to December 2021. The analysis revealed that the overall knowledge regarding menstrual irregularities among female university students was not satisfactory (less than 50%) and only 33.5% (n=73) of students were with satisfactory knowledge level. Overall practices regarding menstrual irregularities were also not satisfactory with only 37.6% (n=82) reporting with good practices level. The results also revealed that there is no correlation between knowledge on menstrual irregularities and attitudes towards menstrual irregularities. The knowledge on menstrual irregularities had a significant association with faculty of study, type of university and A/L stream ($p < 0.05$). Socio-demographic factors such as age, religion and residence were not statistically significant. The practices on menstrual irregularities had a significant association with age and type of university ($p < 0.05$). Prevalence of menorrhagia and amenorrhea are increasing but students were not aware of these menstrual irregularities although the signs and symptoms were present in many of them. Since more than half of the study population was not having good knowledge and attitudes towards menstrual irregularities, the present study strongly suggests the requirement of health education and health promotion programmes to improve the knowledge and attitudes.

Keywords: association, correlation, health, reproductive, socio-demographic

Covid-19 Infection: A Survey of Knowledge and Attitude of Non-Academic Staff in a Sri Lankan University

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Since the beginning of the Covid-19 pandemic in Sri Lanka, the functioning of state Universities were hampered by a number of lockdowns. Even after two years, most of the Universities have not been fully operational due to the health restrictions, and normalcy is still being restored. The contribution by the non-academic staff of a university is vital to the smooth functioning of academic programmes. A cross-sectional descriptive study was conducted in early 2022 to assess the knowledge, possible misconceptions, and post-vaccination attitudes of the non-academic staff of a state university, through an online survey. There were no previous studies in this regard. The self-administered questionnaire assessed general knowledge related to the Covid 19 infection, mode of transmission, safety precautions, symptoms, diagnosis and post-vaccine attitudes. A scoring system was adopted to determine the adequacy of knowledge, where a score exceeding 50 was considered satisfactory. A total of 70 non-academic staff members participated in this study. The study revealed that participants possess satisfactory knowledge pertaining to general information (80%), transmission (99%), and safety precautions related to COVID-19 (99%) obtaining a score of >50%. The knowledge on handwashing technique was sub-optimal. Gaps in knowledge were identified related to symptoms and diagnosis, with only 65% scoring >50%. Some misconceptions held included, that coriander and steam inhalation cured the infection. A positive attitude was evident towards adhering to safety precautions even post-vaccination. The results of the survey will be useful in planning future health education activities related to Covid-19 in universities.

Keywords: *Covid-19, university, non -academic staff, knowledge, attitude*

Anthelmintic Activity of Aqueous Extracts of *Cassia fistula* Linn. *In-vitro* Study

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Anthelmintic resistance is a vital issue in controlling intestinal worm infestations. The traditional medical literature reveals the anthelmintic activity of *Cassia fistula* Linn. (*C. fistula*). Hence, our study aimed to determine the anthelmintic activity based on the specific plant parts of *C. fistula*. An in-vitro study was conducted in different concentrations (40, 20, and 10 mg/mL) of aqueous extract of fresh mature leaves, flowers, stem bark, stem, root bark, root, fruit pulp, and seeds of *C. fistula* on blowfly larvae (*Lucilia eximia*). Albendazole (20 mg/mL) was used as a standard. Distilled water and CMC solution were used as controls. Three larvae were placed in 33 petri dishes (33 groups), and 10 mL of each solution was introduced. The times of paralysis (Tp) and death (Td) of the larvae were noted. The Tp and Td were significantly ($p < 0.05$) lower in the aqueous extract of root bark, stem bark, and fruit pulp of *C. fistula* compared with the standard. However, the minimum Tp (3.66 min) and Td (7.66 min) were observed in 40 mg/mL aqueous extract of root bark. Tp and Td lasted longer in 20 mg/mL (Tp = 101.33 min; Td = 108.66 min) and 10 mg/mL (Tp = 100.66 min; Td = 107.00 min) aqueous extracts of flowers. In conclusion, the entire plant and the plant parts have anthelmintic properties. However, root bark, fruit pulp, and stem bark showed significant anthelmintic activity compared to the standard. Insightful studies on anthelmintic activity of *C. fistula* will improve the treatment of parasitic infestation.

Keywords: anthelmintic, *Cassia fistula* Linn., blowfly larvae

Overweight and Obesity: Knowledge, Attitudes and Recognition by Patients and Medical Practitioners

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The World Health Organization describes obesity as the most visible but neglected public health problem. We assessed the knowledge, perception and attitudes towards obesity among overweight/obese patients and the recognition and management of overweight/obesity by medical practitioners. This descriptive cross-sectional study interviewed 317 overweight/ obese patients during their first visits to medical clinics at the University Hospital, KDU. Overweight (23–27.4 kg/m²) and obesity (>27.5 kg/m²) were defined as per the WHO body mass index (BMI) cut-off values for Asians. A four-part questionnaire assessed demographic characteristics, comorbidities, knowledge, perception and attitudes towards overweight/obesity. Recognition and management of overweight/obesity by medical practitioners were evaluated through recall of previous consultations and review of medical records. Among the study participants, 163(51.4%) were obese and 154(48.6%) were overweight. Sixty-three participants (19.9%) knew BMI is a weight measurement according to height. Only 11 (3.5%) knew the ideal BMI for an adult Sri-Lankan. Less than half (n=144, 45.4%) considered overweight/obesity a medical problem. In 92(59.7%) overweight and 150(92.0%) obese participants, body weight misperception was observed. Of the 267 participants who reported being evaluated by another medical practitioner in the previous six months, 102(38.2%) had been informed of the diagnosis of overweight/obesity by the doctor. Still, the diagnosis was documented only in seven (2.6%) patients. Nonetheless, 110(41.2%) patients had received weight reduction advice during previous consultations and 68(61.8%) had followed the instructions. Poor knowledge and misperception of body weight among the studied population are concerning. Recognition of overweight and obesity by physicians was deficient, and efforts at interventions were inadequate.

Keywords: *obesity, overweight, body mass index, knowledge, recognition*

Analysis of Interleukin-6 and Interleukin-8 in a Cohort of Patients with Colorectal Cancers in Sri Lanka

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Colorectal cancer (CRC) is one of the most prevalent cancers globally, accounting for nearly 10% of all cancers. Interleukin-6 (IL-6) and Interleukin-8 (IL-8) levels have been reported to increase in CRC patients. The studies on IL-6 and IL-8 levels of CRCs have confined to Caucasian populations and levels of these cytokines have not been extensively investigated in South Asian populations. They have the potential of using as markers but are not being used in clinical practice, yet. Therefore, the aim of this study was to investigate the serum IL-6 and IL-8 levels in a cohort of Sri Lankan patients. Blood samples from thirty-five patients with CRCs and thirty five healthy volunteers were obtained after informed consent. The concentrations of IL-8 and IL-6 were measured using ELISA according to manufacturer's protocols. The mean serum concentration of IL-6 was found to be significantly higher in the CRC patients than controls ($p < 0.05$). Although the mean serum concentration of IL-8 was higher in the CRC patients than controls the difference was not significant ($p > 0.05$). Interestingly, the mean serum [IL-6] in colorectal cancer patients was correlated with the disease stage. The study provided preliminary evidence to use IL-6 as a potential biochemical marker to be used in the diagnosis of CRCs. However, it is necessary to analyze more patient samples to validate the results of this study.

Keywords: colorectal cancer, Interleukin-6, Interleukin-8, serum, diagnosis

Review on Antidiabetic Potency of Family Aristolochiaceae Using the Diabetic Rat Model, α -Glucosidase, and α -Amylase Inhibitory Assays

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The plant species in the family Aristolochiaceae consists of various important bioactive compounds, and they are used as functional ingredients in the development of therapeutic agents to act against diseases including diabetes. The main objective of this review is to identify the glucose-lowering potencies regarding the diabetic mellitus of plant species in the family Aristolochiaceae. This was conducted by analyzing the alpha-glucosidase inhibition in the alpha-glucosidase inhibitory assay, the alpha-amylase dehydrogenase rate in the alpha-amylase inhibitory assay, and glucose reduction in the diabetic rat model. In the diabetic rat model, root ethanolic extract of *Aristolochia ringens* showed the highest glucose reduction with the Streptozotocin (STZ) diabetogenic agent, which is 113.1 ± 1.8 mg/dl. The leaf ethanol extract of *Aristolochia indica* showed the highest glucose reduction with the alloxan diabetogenic agent, which is 5.28 ± 0.37 mg/dl. When using dexamethasone as a diabetogenic agent, methanolic extract of the whole plant of *Aristolochia bracteolata* showed the highest glucose reduction, which is 124.5 ± 1.231 mg/dl. In α -glucosidase inhibitory assay, ethyl acetate root extract of *Aristolochia longa* showed the highest IC₅₀ value which is 0.199 ± 0.014 mg/ml. In the α -amylase inhibitory assay, whole plant methanolic extract of *Aristolochia indica* showed the highest α -amylase dehydrogenase rate which is 60.12 ± 0.46 nm/min/mg protein. The genus *Aristolochia* in the family Aristolochiaceae showed significant glucose-lowering potency. Moreover, the importance of using species in the family Aristolochiaceae in the management of diabetes should be identified and accepted for suitable alternative medicines in future studies.

Keywords: *alpha-glucosidase, alpha-amylase, diabetic rat model*

A Relapsed Case of Disseminated Histoplasmosis – A Case Report from Sri Lanka

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Histoplasma capsulatum is a soil saprophyte which is now considered to be endemic in Southeast Asia and Southern Europe. It is a thermally dimorphic fungus seen in damp soil contaminated with bat guano and bird excreta. Here we present a case of disseminated histoplasmosis, which is rarely encountered in the Sri Lankan clinical setting. 57-year-old farmer presented to Army hospital Colombo 05 with painful, pus discharging multiple nodular lesions on face, upper limbs, and trunk for one month. He had oral mucosal lesions with oral swelling and he complained of dysphagia, loss of appetite and loss of weight. He had been treated for *Histoplasma capsulatum* infection four years ago in a different hospital but had defaulted treatment. This patient had been exposed to caves with bats in their village which can be considered as the source of his infection. In this admission histopathology of forehead nodular lesion was compatible with *Histoplasma* infection. KOH direct smear of biopsy samples from R/axillary nodules showed numerous budding yeast cells and culture isolated *Histoplasma capsulatum* at the Mycology Reference Laboratory. CECT revealed numerous foci of calcification in the pancreatic head, body, and tail region with a large amorphous calcification (32mm x 22mm x 16mm) in the tail region. No other organs were involved. He was managed as disseminated histoplasmosis, with IV amphotericin B and oral itraconazole to which he achieved an adequate clinical response. Histoplasmosis should be suspected in patients with granulomatous skin lesions, and prompt diagnosis and prolonged antifungal treatment with close follow up will result in favourable outcomes in these patients.

Keywords: *histoplasma, infection*

Filarial Infections among Migrant Workers Employed in Steel Factories in Gampaha District, Sri Lanka

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In 2016, WHO declared Sri Lanka as a country that eliminated lymphatic filariasis (LF) as a public health problem. Influx of migrant workers from neighbouring countries which are still endemic for LF has been reported in Sri Lanka, recently. Majority of them are employed in the industrial sector in Gampaha district. This could be associated with increased risk spreading LF with the possibility of introducing new strains of *Wuchereria bancrofti* (Wb) and may increase the potential of re-emergence of brugian filariasis. This study reports the initial findings of an ongoing research, conducted jointly by the FOM, KDU and Anti Filariasis Campaign, Sri Lanka, to assess the impact of migrant workers in re-establishment of LF in the country. Migrant workers (N = 1112) who are employed in six steel factories in Gampaha district were enrolled for this descriptive cross-sectional study. Participants' demographic data and other information were collected using a questionnaire. Thick Night Blood Films (NBF) of the participants were prepared and later examined by two independent expert microscopists. A single multiplex PCR was performed using *WBR129* and *BMR188* reverse primers specific for *Wb* and *Brugia malayi* respectively on the participants who were positive for NBF. Screening of NBF identified 14 filariasis positive workers. All NBF positives were confirmed as *Wb* infections by PCR. All positive workers were Indians who resided in Sri Lanka from 3 months to 5 years. Thus, the results indicate that migrant workers could act as reservoirs for LF in the Gampaha district where the density of vector mosquito is high.

Keywords: lymphatic filariasis, migrant workers, *Wuchereria bancrofti*, Sri Lanka

Prediction of Newborn Anthropometric Parameters using Maternal Anthropometry at Tertiary Care Maternity Hospital in Galle District, Sri Lanka

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The state of maternal nutrition, denoted by maternal anthropometric parameters, is found to play a pivotal role in determining new-born anthropometric parameters. This study was conducted to predict new-born anthropometric parameters based on maternal anthropometric parameters. A hospital based cross-sectional study was conducted among randomly selected 333 pregnant mothers admitted for delivery after 28 weeks of gestation at Teaching Hospital Mahamodara, Galle. Pregnant mothers who had multiple pregnancies, registered after 12 weeks of gestation and pre-existing disease conditions that might affect the anthropometric parameters were excluded from the study. Multiple linear regression was performed using SPSS (25th version) at 0.05 significance level. New-born anthropometric and maternal anthropometric parameters which were considered in the study were normally distributed. Maternal anthropometry had mean (SD) of pre-pregnancy weight of 55.1(12.8) kg, maternal height of 154.7(5.7) cm and pregnancy weight gain of 9.6(4.1) kg. New-born anthropometry had Mean (SD) birth weight of 2.79(0.6) kg, head circumference of 32.6(1.7) cm and length of 50.8(3.0) cm. Birthweight was statistically significantly predicted ($F=11.25$, $p<0.001$, adjusted $R^2 = 0.090$) using pre-pregnancy weight ($\beta=11.75$, $p<0.001$) and pregnancy weight gain ($\beta=39.33$, $p<0.001$). Head circumference ($F=13.11$, $p<0.001$, adjusted $R^2 = 0.035$) and length at birth ($F=13.91$, $p<0.001$, adjusted $R^2 = 0.037$) were statistically significantly predicted using pregnancy weight gain ($\beta=0.37$, $p<0.001$ and $\beta=0.60$, $p<0.001$ respectively). New-born anthropometric parameters can be predicted using pregnancy weight gain and pre-pregnancy weight. Hence pre-pregnancy care should be strengthened to optimize pregnancy weight gain and pre-pregnancy weight to achieve optimal new-born anthropometric parameters.

Keywords: *new-born anthropometric parameters, maternal anthropometric parameters*

