



CONFERENCE PROCEEDINGS

2ND INTERNATIONAL RESEARCH CONFERENCE ON HEALTHY DELIGHTS - ஆரோக்கியம் - 2024

**FACULTY OF ALLIED HEALTH SCIENCES
UNIVERSITY OF JAFFNA
SRI LANKA**



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“Exploring Innovations for Global Health Promotions”

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HEALTHY DELIGHTS - ஆரோக்கியம் - 2024**

ICHHD 2024

12th NOVEMBER 2024

**Organized by the Faculty of Allied Health Sciences
University of Jaffna**

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Message from the Vice-Chancellor



Prof. S. Srisatkunarajah
General Chair, JUICe - 2024
The Vice Chancellor,
University of Jaffna.

It is with great pleasure that I extend my warm greetings to all participants of the 2nd International Research Conference on Healthy Delights (ICHHD 2024)-ஆரோக்கியம் 2024, organized by the Faculty of Allied Health Sciences, University of Jaffna. The University of Jaffna proudly stands as a beacon of research and innovation in the Northern region of Sri Lanka. This year, ICHHD 2024 is honored to be one of the satellite conferences of JUICe 2024, held during the momentous Golden Jubilee celebrations of our University. I am particularly delighted that the Faculty of Allied Health Sciences, a dynamic and growing faculty, is hosting this conference for the second time. I hope this conference provides an invaluable platform for researchers and the scientific community around the world to share their groundbreaking research under the theme “Exploring Innovations for Global Health Promotions”. The contributions of various fields in the Allied Health Sciences including Medical Laboratory Sciences, Pharmacy, Nursing, and Sports Sciences are offering insights that boost the advancement of healthcare and patient outcomes worldwide. I wish to extend my heartfelt gratitude to our distinguished keynote speakers for their invaluable contributions and willingness to share their profound research experiences. This conference fosters global collaboration and a multidisciplinary approach, creating a fertile ground for innovation and progress. I also wish to congratulate all the authors and participants for their dedication and for presenting their significant research findings. Finally, I commend the organizing committee and the staff of the Faculty of Allied Health Sciences for their hard work and dedication in making this conference a resounding success.

Message from the Dean



Mrs. Deivy Thabotharan
Conference Chair, ICHD - 2024,
The Dean,
Faculty of Allied Health Sciences,
University of Jaffna.

I'm very honored to share my words and welcome each one of you to the 2nd International Research Conference on Healthy Delights (ICHD-2024) ஆரோக்கியம், organized by Faculty of Allied Health Sciences, University of Jaffna. This is one of the satellite events within the prestigious JUICe 2024, aligning with the grand celebrations of our University's Golden Jubilee. As Dean of the Faculty of Allied Health Sciences, I am very excited to see this conference again, fostering a vital platform where researchers worldwide converge to discuss the advancements in healthcare under the theme, "Exploring Innovations for Global Health Promotions." At this time, we are having four technical sessions chaired by subject experts, and anticipate invaluable discussions in various disciplines within Allied Health Sciences including Medical Laboratory Sciences, Nursing, Pharmacy, and Sports Sciences. Each field contributes uniquely to advancing healthcare and enriching patient lives globally, and this conference embodies that multidisciplinary spirit. I extend my deepest gratitude to our esteemed keynote speakers who accepted to be part of this conference. I wish to extend my appreciation to the plenary speakers who agreed to share their experience and knowledge in research in this forum. To all presenters and participants, I congratulate you all on your invaluable contributions and commitment to research and the advancement of global health. My heartfelt appreciation also goes to our organizing committee and faculty staff, whose tireless efforts have made ICHD 2024 a reality. May this gathering inspire new collaborations and innovations that continue to shape the future of global health.

Thank you, and welcome to ICHD 2024.

Message from the Convener



Mrs. T. J. Gnanakarunyan
Convener, ICHD-2024,
Faculty of Allied Health Sciences,
University of Jaffna.

It is my great pleasure to convey this message to the proceedings of the 2nd International Research Conference ICHD -2024 hosted by the Faculty of Allied Health Sciences, University of Jaffna. ICHD- 2024 themed “Exploring Innovations for Global Health Promotions” emphasises the need of advance researches in the health care locally and globally. ICHD- 2024 offers great opportunity to our young researchers to disseminate their research findings mainly in the fields of Medical Laboratory Sciences, Nursing, Pharmacy, Sports Sciences and other relevant fields in Health Sciences. We strongly believe that the innovations by our researchers would contribute to the betterment of the health care system. Further, research enhance the scientific based creativity of young people and help to extend their knowledge, analytical and decision-making skills. I would like to congratulate the researchers who contribute their valuable findings to this scientific forum. On behalf of the ICHD- 2024 conference organizing committee, I extend my heartfelt gratitude to the Vice-Chancellor University of Jaffna and Dean, Faculty of Allied Health Sciences for their unwavering support of this scientific conference. I would like to extend my special gratitude to the keynote speakers Prof. Suceena Alexander and Prof. Faseeha Noordeen for accepting our request to deliver their keynote speeches at this international conference. I also extend my sincere thanks to the plenary speakers Mrs. Luxmi Kamalarupan and Mr. B. Jaikrishna for sharing their findings in this forum. I would like to thank the reviewers for their timely help and support during the review process. Further I extend my sincere thanks to all the members in the organizing committee and all the staff of the faculty for their tired less dedicated work.

I wish for the success of this conference and have a Great event.

Message from the Chief Editor



Mrs. L. Kamalarupan
Chief Editor, ICHD-2024,
Faculty of Allied Health Sciences,
University of Jaffna.

We are happy to release the proceedings of the 2nd International Conference on Healthy Delights - ஆரோக்கியம் - 2024 of Faculty of Allied Health Sciences, University of Jaffna with its special theme on “Exploring Innovations for Global Health Promotions”. This conference provides a platform for allied health professionals and students to present their findings and be able to receive insightful feedback to improve their work. The abstracts submitted to the conference were subjected to a review process in-order to ensure the quality of the abstracts. First-line screening of abstracts was carried out by editors to check whether each abstract was compiled with the author’s guidelines. Then each paper was reviewed with a double-blind review process by two reviewers who are in the relevant field. Totally 24 abstracts were accepted for this conference after this rigorous review process. The papers were received in the fields of Nursing, Medical Laboratory Sciences, Pharmacy, Education, Physical education, and other health related areas. The conference was conducted for one day with two keynote speeches, two planetary speeches, and 24 oral paper presentations. All papers are presented in four technical tracks. I would like to express my deepest appreciation to all the authors for submitting their abstracts to this forum. Also, I thank all the Reviewers for their invaluable input on the peer-reviewed process. I wish to say my gratitude to all the keynote speakers and Plenary speakers who gave up their precious time to deliver the distinguished talks I sincerely acknowledge my colleague Mrs. P. Sathya (BPharm, MPhil) who is the Associate Editor of this conference who provided immense support in various aspects on preparing this conference proceedings. I thank all the track chairs and tract coordinators for their great effort to conduct the oral presentation smoothly. I also thank everyone who made suggestions to improve this proceeding.

Abstract of Keynote Speech

Chronic Kidney Disease and equitable care in relation to CKD-U

Prof. Suceena Alexander

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Department of Nephrology, Christian Medical College, Vellore, Ranipet Campus India.



CKD of unknown etiology (CKDu) is a form of chronic kidney disease that is being increasingly recognized from isolated agrarian and rural locations especially across the tropical and sub-tropical countries like Nicaragua, El Salvador, Costa Rica, Sri Lanka, India, Egypt, and Tunisia. More hotspots are being identified worldwide. The disease predominantly affects young males, in occupations that expose them to environmental heat and toxins such as agriculture, open furnaces and manual labour. By definition, the disease is endemic among the underprivileged communities. The disease has a long asymptomatic phase which lends itself difficult to be identified at an early stage except by focused screening of blood and urine. People typically do not have diabetes or hypertension which are the traditional risk factors for chronic kidney disease. The disease is progressive leading to end stage kidney disease over several years. Histologically, kidney tissue has varying degrees of tubular atrophy and interstitial fibrosis with inflammatory cells. This undermines the need for screening of at risk populations at a national level to uncover new but unrecognised hotspots and to gear equitable distribution of CKD resources. These should be available, acceptable and affordable to every region that is a CKDu hotspot. To conclude, screening and identification of these regions at a national level can help policy makers to allocate and prioritise resources equitably. It will also spearhead preventive measures and environmental change for a better future.

Abstract of Keynote Speech

Respiratory viral infections in children in Sri Lanka - What do we know? What can we do to improve diagnosis and surveillance?

Prof. Faseeha Noordeen

Chair Professor of Microbiology, Faculty of Medicine, University of Peradeniya, Sri Lanka.



Acute respiratory tract infections (ARTIs) including pneumonia are a leading cause of morbidity and mortality in children worldwide. According to the World Health Organization (WHO), 150 million cases of pneumonia occur each year in children less than 5 years of age. Of these, 20 million cases require hospitalization causing 935000 deaths. It is estimated that viruses contribute to approximately 70% of childhood pneumonias. Viruses are the predominant causes of ARTIs in children, and human respiratory syncytial virus (hRSV), human parainfluenza viruses (hPIVs), human metapneumovirus (hMPV) and influenza viruses cause upper (URTIs) and lower respiratory tract infections (LRTIs) in infants and children. Of these, hRSV and hPIVs are the commonest cause of ARTI associated hospitalizations in children below 5 years of age. Overall, 3% to 18% of the hospitalizations occur due to ARTIs and majority of them are caused by hRSV, hPIVs and hMPV. According to the Ministry of Health of Sri Lanka, pneumonia and LRTIs are one of the 10 principal causes of death in public hospitals with 9% mortality in children less than 5 years of age (13.9% in 2012). Sri Lanka is a tropical country and ARTIs occur throughout the year. Most respiratory viruses are underestimated as a cause of morbidity and mortality among children in Sri Lanka since physicians' focus is mainly on influenza and COVID-19. However, the available data indicates that respiratory viral infections contribute to a substantial disease burden. From a study conducted in Kegalle, from July to September 2011, in a total of 99 children tested, 32.3% had respiratory viral infections including hRSV and influenza. A large-scale study conducted from 2013 to 2014 in the North Central and the Central provinces of Sri Lanka reports a prevalence of 37.2% and 39.4% infections in children younger than 5 years of age. During the pandemic, in Sri Lanka as well as in other countries, SARS coronavirus-2 (SARS CoV-2) has also been shown to cause ARTI in children. On the other hand, seasonal corona viruses (CoV) also cause ARTI in children. In general, viral ARTI are associated with substantial socioeconomic consequences. The burden of viral ARTI in children has an impact on the growing economies, however, the actual burden is underestimated due to limitations in viral diagnostic and surveillance facilities in developing countries like Sri Lanka. Identifying viral causes of ARTI using optimal laboratory diagnosis and the pattern of distribution of viral ARTI in a location through surveillance will help implementing the early preventive measures to reduce the disease burden.

Abstract of Plenary Speech

Participation of allied health professionals in improving the quality of life of elders in Sri Lanka through the CAPAGE project

Luxmi Kamalarupan

Senior Lecturer,

Department of Nursing, Faculty of Allied Health Sciences, University of Jaffna, Sri Lanka.



The worldwide population is getting older. Sri Lanka is also one of the fastest-aging countries in South Asia. The elderly population (age 60 or more) in Sri Lanka is 12.4%. The elderly population in Jaffna is comparatively high, 14.1%. Ageing is associated with a general decline in physical and cognitive capacity and it is often accompanied by chronic diseases and increased hospitalization. Hence, aging still means more years of living in poor health. Population ageing affects nearly all aspects of society. This requires our collective efforts to achieve living with a healthy longer life. It is the responsibility of the health care team to promote healthy and active ageing of the elderly. Nurses are the one of the key players in a multidisciplinary team to contribute on healthy and active ageing. The Faculty of Allied Health Sciences of the University of Jaffna realized the importance of working in this area to enhance the quality of life of elders through enhancing the professional competencies of nurses who are working with elders. Department of Nursing, Faculty of Allied Health Sciences of the University of Jaffna got an opportunity to work on this area from 15th January 2024 through a CAPAGE project which is co-funded by the European Union and is focused on enhancing the quality of life of elders of Sri Lanka. Under this Project, Sri Lankan partners from six universities and Health European Union Institutions working together to develop a sustainable innovation to enhance the quality of life of elders. The major aim of the project is to enhance the professional competencies of health care providers; mainly nurses and physiotherapists who are working with the elderly. Key activities taking place in this project are: co-creating competence-based academic e-learning courses for nursing students in Healthy Ageing; Organizing workshops to train the Health care professionals, Introduce Geriatric course units in BSc Nursing curriculum in Sri Lankan universities; Establishing geriatric assessment laboratories; Establishing Active Aging Information Centers (AAIC), re-establishment of the existing potential in Health Care practice with elderly in Sri Lanka. This project will end up in three years duration in 2027. However, this initiated work will be continued and it will give a sustainable change in the quality of life of elders in Sri Lanka.

This presentation is prepared based on the literature in CAPAGE Geriatric project.

I acknowledge all the CAPAGE project members.

Abstract of Plenary Speech

Beyond conventional biopsies: The promise of salivary miRNAs in the diagnosis and prediction of oral cancer

Jaikrishna Balakittnen ^{1,2}, Chameera Ekanayake Weeramange ¹, Daniel F. Wallace ³, Pascal H.G. Duijf ⁴, Alex Cristino ¹, Gunter Hartel ⁵, Roberto A. Barrero ³, Touraj Taheri ⁶, Liz Kenny ⁶, Sarju Vasani ⁶, Martin Batstone ⁶, Omar Breik ⁶ and Chamindie Punyadeera ¹

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Oral cancer (OC) is the sixteenth most prevalent cancer worldwide. More importantly, 10% of OC arises from oral potentially malignant disorders (OPMD). Despite the high incidence, there are no biomarkers for the early detection of OC, and patients are often diagnosed at their advanced stages (5-year overall survival ~ 50%). This study aimed to discover, develop and validate novel saliva-based microRNA signatures to diagnose OC and predict the risk or presence of OC in OPMD patients. Eight miRNAs (miR-7-5p, miR-10b-5p, miR-182-5p, miR-215-5p, miR-431-5p, miR-486-3p, miR-3614-5p, miR-4707-3p) were discovered when considering The Cancer Genome Atlas (TCGA) miRNA sequencing data and small RNA sequencing of saliva samples (OC: n=12, and controls: n=8). Expression levels of miRNAs were validated in saliva samples of OC (n=50), OPMD (n=52) and controls (n=60) using quantitative real-time PCR. Further validation was performed in OC tissue (n = 6) and normal oral cavity tissue samples (n=5). We have developed miRNA signatures for the early detection of OC and discrimination of OC from OPMD patients. The discriminative efficiency of our eight-miRNA signature between OC and controls was Area Under Curve (AUC): 0.954, sensitivity: 86%, specificity: 90%, positive predictive value (PPV) of 87.8%, and negative predictive value (NPV) of 88.5% whereas between OC and OPMD was AUC: 0.911, sensitivity: 90%, specificity: 82.7%, PPV of 74.2% and NPV of 89.6%. More importantly, we have developed a risk probability score to predict the presence of OC or malignant transformation in OPMD patients. Our results highlight that the salivary miRNAs can be used as biomarkers to diagnose OC and predict OC risk in OPMD patients early. More importantly, the risk probability score provides promising results in predicting the presence or likelihood of developing OC in OPMD patients. Further validation is essential to support clinical integration, but these results underscore the transformative potential of saliva-based diagnostics in OC care.

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Knowledge on palliative care and associated factors among nurses working in Teaching Hospital Jaffna

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Palliative care is a multidisciplinary approach that improves the quality of life of patients and their families facing a life-threatening illness. It is entirely a new concept in developing countries. Identifying the level of knowledge on palliative care among nurses may result in the successful delivery of nursing care. The aim of the study is to assess the knowledge on palliative care and associated factors among the nurses working at Teaching Hospital, Jaffna. A hospital-based descriptive cross-sectional study was conducted among 276 nurses working in Teaching Hospital, Jaffna from June to August 2024 using stratified random sampling technique. A pre-tested self-administered questionnaire was used to collect the data. The knowledge level towards the palliative care was assessed using the modified Palliative care Knowledge Test. It was converted to percentages and categorized as, inadequate ($\leq 50\%$) and fair ($>50\%$) according to the total score. Ethical clearance was obtained from the Ethics Review Committee, Faculty of Medicine, University of Jaffna. IBM SPSS 25 was used to analyze the data. Chi-squared test was used to find the association between knowledge and socio-demographic factors. Response rate of the study was 95.28%. Nearly three fourth of them (73%) were females, mean age was 33.47 years ($SD=\pm 7.391$) and 71.1% had diploma in Nursing. Mean score of overall knowledge was 9.94 ($SD=\pm 2.512$) with range from 3 to 15. Among them, 63.5% had fair and 36.5% had an inadequate knowledge level. Work experience ($p=0.028$) and heard about palliative care ($p=0.003$) showed statistically significant association with the knowledge of nurses towards palliative care. More than half of the respondents had fair knowledge. It is good to give more emphasis on palliative care while developing health policy, nursing curriculum, training on palliative care, and continuous professional development to enhance knowledge among nurses.

Keywords: *Associated factors, Knowledge, Nurses, Palliative care*

Knowledge and its associated factors on myocardial infarction among the patients attending cardiology clinic, Teaching Hospital, Jaffna

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Myocardial infarction is one of the potentially fatal coronary-associated disorder marked by unexpected cardiac cell death. Globally, it is one of the main causes of death. Patients' knowledge is essential for managing post-MI condition. To enhance the health outcome, patient education and support is most important. The aim of the study is to assess the knowledge on myocardial infarction and associated factors on it among the patients with myocardial infarction attending the cardiology clinic, Teaching Hospital Jaffna. Hospital based descriptive cross-sectional study was conducted among 403 patients with myocardial infarction, attending cardiology clinic, Teaching Hospital Jaffna. A pretested interviewer-administered questionnaire was used to collect the data and systematic random sampling technique was used to select the participants. Ethical clearance was obtained from Ethics Review Committee, Faculty of Medicine, University of Jaffna. The data were entered by using IBM SPSS Statistics 27. The variables were described by using descriptive statistic and the Chi-squared test was used to find the association. Among 403 participants the mean age was 65.18 (SD=±9.811) with the range from 31 to 85 years. Most of them were male (69.5%) and Sri Lankan Tamil (96.5%). Nearly half of them having primary education (51.9%) and 18.6% were not having any formal education. The mean overall knowledge score was 21.33 (SD=±5.282) and two third of participants (68.0%) had adequate knowledge. Knowledge had statistically significant association with level of education ($p < 0.001$), ethnicity ($p = 0.040$) and monthly family income ($p = 0.012$). There is no any significant association with knowledge and age, gender, religion, marital status, occupation and family history of MI. However, the majority of patients have adequate knowledge on their condition, a significant proportion still lacks on essential understanding on radiating pain as physical symptom and impact of diabetes, physical inactivity, obesity, and high blood pressure as risk factors. To enhance patient knowledge, frequent educational programs will be useful to improve the health outcome.

Keywords: Knowledge, Myocardial infarction, Patient, Associated factors

Practical application of history taking in patient care among nurses of Central Province, Sri Lanka

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The primary goal of nursing care is to meet the physical, psychological, and spiritual needs of individuals. History taking, as the initial step in nursing assessment, should focus on addressing the patient's physical and biopsychosocial needs. However, many patients report that their concerns are not adequately addressed during hospital stays. This highlights the importance of exploring practical approaches to improve nursing history taking. The aim of the study is to explore the perception, barriers and practical approaches in history-taking in patient care among nurses working in the central province, Sri Lanka. Ethical clearance was granted by the Faculty of Allied Health Sciences, University of Peradeniya. Eight focus group discussions were held with 40 nurses from four government hospitals in the Central Province of Sri Lanka, between May and August 2024. A purposive sampling technique was used, and qualitative thematic analysis was carried out by two independent researchers. The main 04 themes and 11 sub-themes were obtained from qualitative thematic analysis. (Main theme 1: Effective initial approach in history taking: *Diversity of history taking from admission to discharge, Initial one minute to explode, Focus on needs of patients*) (Main theme 2: Approach of inquiry directs the interview: *Impact of Pattern of questioning, Impact of Tone of questioning, Explore Possible questions*) (Main theme 3: Untold stories are important: *Identification of Non-verbal clues, Investigate indirect Questions*) (Main theme 4: Challenges to address: *Unfavourable clinical environment, Haphazard history taking, Unfavourable Patient factors of history taking*). Nurses' participation in history-taking within clinical settings is vital for creating an effective nursing care plan. However, the practical aspects of history-taking can be challenging, as its success relies on patient-related factors, environmental conditions, and the healthcare provider. The role of nurses in using the biopsychosocial approach during history taking is crucial for providing comprehensive nursing care. Addressing the challenges associated with history taking requires ongoing professional development.

Keywords: *History taking, Nursing assessment, Biopsychosocial approach*

Factors associated with knowledge on blood donation among the undergraduates of University of Jaffna

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Blood is a vital and life-saving substance in medical emergencies. To ensure a steady supply of safe blood and blood products, a sufficient number of self-directed blood donors from the young population must be encouraged. For that, revealing the present knowledge on blood donation among them is significant. The aim of the study is to assess factors associated with knowledge on blood donation among undergraduates of University of Jaffna. An institution-based descriptive cross-sectional study was conducted among undergraduates from eight faculties of University of Jaffna. Data were collected by using pre-tested self-administered questionnaire from 370 participants. Data were analyzed using SPSS version 25 and participants' knowledge was assessed based on their knowledge scores, with over 60% considered adequate and less than 60% considered inadequate. Association between knowledge and sociodemographic factors was identified using chi-squared test. Out of 370 participants, 61.9% (229) were female and mean age was 23.5 (SD=±0.985) years. Among them 27% were previously donated blood. From total respondents, only 25.4% had adequate knowledge on blood donation. The mean score for overall knowledge was 44.27% (SD=±9.171). More than half of the participants (59.7%) know the minimum recommended body weight for blood donation. Most of the participants (73.2%) know HIV can be transmitted by blood donation whereas only 35.7% of participants know syphilis can be transmitted by blood donation. There was a statistically significant association between knowledge and age (P= 0.027), nationality (P=0.05), residential area (P= 0.01) and academic year (P<0.001) and remarkably there was no significant association between knowledge and being a blood donor. The finding shows lack of knowledge regarding blood donation among the study population. Therefore, study suggests implementing awareness programs and distributing information leaflets on blood donation among targeted non-health related undergraduates will help to improve the level of knowledge.

Keywords: *Blood donation, Knowledge, Undergraduates*

The effect of structured physical activity on behavior, sensory profile, and skill acquisition in autistic children

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In autistic individuals, physical activity is known to improve motor skills and social functioning, and decrease stereotypy, off-task behavior, and sensory issues. Structuring physical activities are those that are organized and directed by someone and provide predictability, creating a lower-stress environment for children to learn necessary skills. This study aimed to identify the effects of structured physical activities on behavior, sensory profile, and skill acquisition among autistic children. This institution-based experimental study was conducted at a center for neurodevelopmental disorders in Jaffna among 20 children diagnosed with autism spectrum disorder. Children were randomly assigned to intervention and age-matched control groups, and engaged in structured and unstructured physical activities, respectively, for 40 minutes a day thrice weekly for 3 months. These children were not undergoing Early Intensive Behavioral Intervention therapy during the study period. The structured activities targeted coordination, balance, muscle strength, and joint strength. The unstructured physical activities are sometimes called ‘self-selected free play’ which the children start by themselves. Parameters of interest such as behavior, sensory issues, and skill acquisition were measured before and after intervention using a locally developed behavior checklist, Sensory Profile-2, and Assessment of Basic Language and Learning Skills (ABLIS). Data were analyzed in R statistical computing software using linear multilevel regression. The average age of the children was 4 years (± 1). Structured physical activity had a significant influence on the behavioral checklist score, with children in the intervention group showing a greater decrease in behavioral issues ($p=0.013$), particularly in mood- and anxiety-related behaviors ($p=0.025$). Although these children also had greater improvement in sensory registration issues, this difference did not reach statistical significance ($p=0.090$). The results of ABLIS showed that children in the intervention group developed significantly more gross motor skills than children in the control group ($p=0.015$). Adding structured physical activity to the repertoire of therapies for autistic children will be beneficial to facilitate motor skill acquisition and alleviate behavioral and possibly sensory issues.

Keywords: Autism, Structured physical activity, Behavior, Sensory issues, Gross motor skills.

Prevalence of pyuria, culture positivity and antibiotic sensitivity test pattern of isolated bacteria among chronic kidney disease patients attending Nephrology clinic, Teaching Hospital Jaffna

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Chronic kidney disease (CKD) is a widespread health issue affecting millions worldwide. It weakens the immune system, increasing the risk of urinary tract infections (UTIs), which can worsen CKD. Pyuria, a common symptom, can result from infection or inflammation. Distinguishing between these is important for treatment. Monitoring antimicrobial resistance is crucial for effective management and preventing kidney damage. Objective of this study is to determine prevalence of pyuria, culture positivity and antibiotic sensitivity test pattern (ABST) patterns of isolated bacteria among CKD patients attending to Nephrology clinic, Teaching Hospital Jaffna (THJ). Institution-based cross-sectional study on 203 CKD patients (stage I to V), was conducted at nephrology clinic, THJ from May to July, 2024 excluding hemodialysis patients. Random sampling technique was used. Specimen processing and bacterial identification were done according to standard protocols from the “Laboratory Manual in Microbiology” by the Sri Lankan College of Microbiologists. Mid-stream Urine samples were inoculated on CLED media using 1µL calibrated wire loop and urine microscopy was performed in each sample. ABST was performed on all isolated bacteria using CLSI disk diffusion method. Obtained data was analyzed using SPSS version 27 with findings presented graphically and in tables. Among 203 urine samples, 27.6% (56) showed significant pyuria, with 75% (42) classified as sterile and 25% (14) indicating UTI pyuria. Significant bacterial growth was found in 12.8% (26) with predominantly *Coliforms* (76.9%), followed by *Acinetobacter* (7.6), *Enterococcus* (7.6%), *Pseudomonas* (3.8%) and *Staphylococcus* (3.8%). *Coliforms* were highly susceptible to gentamicin (80%), but resistant to ampicillin (78.9%). All isolates were resistant to ampicillin and 50% exhibited multidrug resistance (MDR). This study showed a high prevalence of sterile pyuria. Bacterial growth was found in fewer samples, mainly *Coliforms*, which exhibited significant MDR. Gentamicin and nitrofurantoin were effective treatments for most pathogens. There is a significant association between culture positivity and pyuria.

Keywords: Prevalence, Pyuria, CKD, ABST, Culture Positivity

Preanalytical errors in a hematology laboratory of a tertiary care hospital in Sri Lanka: A Six Sigma analysis

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Precision and accuracy of laboratory results are vital for clinical diagnostics, but preanalytical errors can impact the test reliability, patient safety, and treatment efficacy. Six Sigma was reported as one of the best quality indicators for evaluating laboratory errors and performance; however, its applicability in the preanalytical phase of hematology laboratories in Sri Lanka is limited. Thus, this study aimed to evaluate the preanalytical errors of a hematology laboratory in a tertiary care hospital in Sri Lanka using Six Sigma analysis. A retrospective observation study was conducted from October 2023 to March 2024. Data regarding preanalytical errors was manually retrieved from the paper records maintained in a hematology laboratory of a tertiary care hospital in Sri Lanka. The distribution of errors was determined using descriptive statistics and subjected to converting defects per million opportunities and Sigma values using the Sigma scale and Sigma calculator available at <https://westgard.com>, respectively. During the study period, 411 preanalytical errors were detected with an error rate of 0.9% from 45,490 test samples. Out of nine preanalytical errors detected, the majority of errors were due to clotted samples (62.5%). The next most common errors noted were insufficient samples (8.3%) followed by inappropriate containers (6.1%), mismatched samples (5.85%), incomplete request forms (5.4%), and absence of request forms (5.1%). Furthermore, 6.8% of the errors were attributed to hemolyzed samples, delayed samples, and wrong anticoagulant-to-blood ratio. Six Sigma analysis indicated that the overall Sigma values were above 4 among which the lowest sigma of 4.1 was observed for clotted samples followed by 4.7 for insufficient samples. The highest sigma value of 5.1 was observed for hemolyzed, delayed, and wrong anticoagulant-to-blood ratio samples. Results indicated that Six Sigma is a valuable tool for evaluating preanalytical errors in hematology laboratories. Implementing Six Sigma analysis for preanalytical error determination in hematology laboratories in Sri Lanka is recommended.

Keywords: *Pre-analytical errors, Hematology laboratory, Six Sigma, Sri Lanka*

Indirect estimation of reference intervals for complete blood count: Applicability of *refineR* to a base hospital laboratory in Sri Lanka

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Interpreting laboratory test results requires comparison to reference intervals (RIs) which can be established by direct or indirect methods. The application of direct methods is limited due to resource requirements, sample definition, and ethical issues, leading to the development of alternative algorithms. *RefineR*, an inverse-modeling algorithm, offers a free alternative to direct RI estimation methods, but its effectiveness and applicability for routine hematological tests in diverse ethnic populations remain unknown. Therefore, the present study aimed to investigate the applicability of the *refineR* in determining RIs of complete blood count (CBC) in a base hospital laboratory in Sri Lanka. A retrospective, cross-sectional study was conducted from June 2023 to May 2024. Routine CBC test reports stored at Base Hospital, Chavakachcheri, Jaffna, were extracted and subjected to data cleaning by removing pathological fractions and invalid data. The cleaned data were portioned by sex and subjected to RI calculation by *refineR*. The obtained RIs were compared with the RIs used by the hospital by calculating the bias ratio (BR). The BR of more than ± 0.375 was considered a significant difference according to the conventional specification of allowable bias at the minimum level. Statistical analysis was performed using SPSS version 18. During the study period, 19,145 CBC data were recorded, among which 6,542 male and 8,456 female data were qualified for RIs calculation. Out of 13 CBC parameters analyzed, 8 RIs for males and 7 RIs for females were similar to existing RIs ($BR < 0.375$). Furthermore, 6 RIs for females and 1 RI for males showed > 0.375 BR either in the upper limit or lower limit ranges albeit 2 RIs for males were slightly different ($BR > 0.375$) from currently used RIs in the hospital. *RefineR* can be used as a cost-effective alternative method for calculating RIs of CBC for resource-limited base hospitals in Sri Lanka using appropriate data cleaning methods.

Keywords: Complete blood count, Reference intervals, *RefineR*, Base hospital, Sri Lanka

Knowledge, attitudes, and practices regarding Dengue fever among the students of Jaffna University

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Dengue fever is recognized as the most common mosquito-borne viral disease in recent decades and is one of the world's emerging infectious diseases. Epidemiological data from Sri Lanka showed a gradual increase in morbidity and mortality from 2009 to 2019. Preventive measures are crucial in controlling and limiting the spread of mosquito vectors. This study aimed to evaluate the knowledge, attitudes, and practices (KAP) regarding Dengue fever among university students of Jaffna. A descriptive cross-sectional study was conducted among first-year students at the University of Jaffna in August 2019. Stratified random sampling was used, and data were collected using a self-administered questionnaire. Ethical clearance was obtained from, Faculty of Medicine, University of Jaffna. Each participant's KAP regarding dengue fever (DF) were individually scored out of 100. A score of 75 and above was classified as 'good' KAP, scores between 50 and 74 as 'average,' and scores below 50 as 'poor'. Descriptive data were analyzed using Pearson's chi-squared test, with a p-value of less than or equal to 0.05 considered significant. Among the participants, 74%, 99.6%, and 60.8% demonstrated satisfactory KAP regarding dengue fever, respectively. Students of Faculty of Management studies and commerce showed the highest percentage of above-average knowledge (93%), followed by students of Faculty of agriculture (87.5%) and students from Faculty of Medical students (85.7%). Among the faculties, 100% of students had above-average attitudes (p=0.008) except Faculty of sciences. Additionally, 86% of Students from Faculty of Management studies and Commerce had above-average level of practice (p = 0.001). This study revealed that all the undergraduate students had better attitudes regarding dengue fever. Although over half of the participants demonstrated satisfactory levels of knowledge and practices, significant gaps still remain. Greater emphasis should be placed on improving knowledge and practices among undergraduate students at the University of Jaffna.

Keywords: *Dengue, Knowledge, Attitude, Practice, University students*

Sigma metrics as a tool for evaluating the analytical performance of hematology laboratory: A first report from Sri LankaRathnayake H. N.¹, Perera M. J. H.¹, Weerathne T. D. U. N. R.¹ and Rasaratnam K.^{1*}¹*Department of Medical Laboratory Sciences, Faculty of Allied Health Sciences, University of Jaffna, Sri Lanka.
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Clinical laboratories enhance patient care efficiency by selecting appropriate tests, providing trustworthy results, and accurate interpretation. Quality management strategies, such as sigma metrics, are crucial for reducing errors and improving quality control processes. However, the applicability of sigma metrics for evaluating the analytical quality of hematological tests in Sri Lankan laboratories is limited. Thus, the present study aimed to assess the analytical process performance of a hematology laboratory in Sri Lanka using Six Sigma models. A retrospective study was conducted by extracting internal quality control (IQC) and external quality assessment (EQA) data from a tertiary care hospital in the Western province of Sri Lanka over one year, from May 2023 to April 2024. The mean, standard deviation, coefficient of variation, percent bias, and sigma values of White blood cell (WBC) count, Red blood cell (RBC) count, Hemoglobin (Hb) concentration, Hematocrit (Hct), and Platelet (PLT) count were calculated in Microsoft Excel using the total allowable error (TEa) of Clinical Laboratory Improvement Amendments-2024. The analytical performance of the tests was assessed based on the sigma level: <3 displayed poor performance, 3-6 was graded as acceptable, and >6 implied good performance. For the low-level IQC, two analytes (WBC and PLT) showed an acceptable performance of 3-6 sigma level and three analytes (RBC, Hb, and Hct) showed poor performance of <3 sigma level. For high-level IQC, PLT exhibited a good performance of >6 sigma level while WBC showed an acceptable performance. Furthermore, three analytes (RBC, Hb, and Hct) showed poor performance. For normal-level IQC, WBC, Hb, and PLT demonstrated good performance while RBC and Hct exhibited poor performance. Overall, the reliability of the results of Hct and RBC is questionable since they show <3 sigma values. The calculation of Sigma metrics clearly exhibited the test performance of hematological parameters; thus, Sigma metrics can be used as a valuable tool for evaluating the analytical process performance of hematology laboratories in Sri Lanka.

Keywords: *Sigma metrics, Analytical performance, Hematology, Sri Lanka*

Study of culture and antibiotic sensitivity of bacterial isolates in patients with urinary tract infection at OPD National Hospital Kandy

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Urinary tract infection (UTI) is a common medical problem. Knowledge on local antimicrobial susceptibility patterns among urinary isolates will guide clinicians to deliver effective treatment while avoiding unnecessary usage of broader spectrum antibiotics. The purpose of this study is to isolate and determine the antibiotic sensitivity patterns of bacterial isolates in patients with UTI attending outpatient department at National Hospital Kandy. In this study, 403 patients with symptoms of UTI were selected with the help of the medical officers. Urine samples were collected and inoculated on Cystine Lactose Electrolyte Deficient Agar (CLED). Pure growth concentrations of 10⁴-10⁵ CFU/ml were considered. Single-organism identification is done by using relevant biochemical tests. ABST was performed on all isolated bacteria by the Clinical and Laboratory Standards Institute (CLSI) disk diffusion method. SPSS version 21 was used to analyze the data with statistical significance at $p < 0.05$. From 403 UTI patients, 24.3% (98 out of 403) revealed significant bacterial growth. The majority of the bacteria isolated from the samples were coliforms (67%), followed by *Staphylococcus saprophyticus* (14%), *Streptococcus* spp. (6%), *Acinetobacter* spp. (4%), *Pseudomonas* spp. (4%), *Enterococcus* spp. (2%) and *Proteus* spp. (2%). In this study 10% of the identified coliforms exhibited multidrug resistance (MDR), with particular emphasis on the need for cautious antibiotic selection. Moreover, in this study coliforms exhibited significant resistance against ciprofloxacin (54.5%) and co-amoxiclav (46.9%). Furthermore, *Enterococcus* spp. and *Streptococcus* spp. showed 100% sensitivity to ampicillin and vancomycin and *Acinetobacter* spp. showed high levels of resistance to tetracycline (75%). On the other hand, the study revealed that nitrofurantoin as an effective treatment for *Staphylococcus saprophyticus*. Current study showed that coliforms are the predominant uropathogen and nitrofurantoin, amikacin and piperacillin-tazobactam are highly effective antibiotics for treating Gram-negative bacilli.

Keywords: UTI, Antibiotic sensitivity pattern, Bacterial isolates

OP-ID 12**Knowledge, attitude and practice regarding rabies and the association of sociodemographic factors among school students in Northern Sri Lanka**Srinekethan L.¹, Arulnesan A. A.², Coonghe P. A. D.³ and Murugananthan K.^{2*}¹*German Sri Lanka Friendship Hospital for women, Galle, Sri Lanka.*²*Department of Microbiology, Faculty of Medicine, University of Jaffna Sri Lanka.*³*Department of Community and Family, Faculty of Medicine, University of Jaffna, Sri Lanka.
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Rabies is a 100% vaccine-preventable zoonotic disease. Despite vaccination efforts, insufficient awareness about seeking prompt medical care after an animal bite contributes to the continued prevalence of rabies in Sri Lanka. This study aimed to assess the Knowledge, Attitude, and Practice (KAP) regarding rabies and the association of sociocultural factors among school students in Northern Sri Lanka. A descriptive, school-based study was conducted among 715 advanced-level students from National schools in the Jaffna zone during September 2019. Proportionate stratified random sampling was used. A self-administered questionnaire, developed with expert input, assessed the Knowledge, Attitude, and Practice and the impact of sociocultural factors. Scores for each domain were categorized as poor, moderate, or good, based on predefined thresholds. The minimum and maximum possible scores ranged from 1 to 10 were given. Ethical clearance for this study was obtained from Ethical committee, Faculty of Medicine, University of Jaffna. Data were analyzed using SPSS 21 and the chi-squared test was used to assess the association between variables and, p-value less than 0.05 considered statistically significant. Among the participants, 58% were male, with a median age of 17 years (IQR: 16.5–19.5). Only 6% of students had “Good” knowledge, while 48.7% had a & “Moderate” understanding of rabies (mean score: 48.95±14.16). Attitudes were generally poor, with 32.2% displaying a good attitude (mean score: 53.59±25.20). Practices were notably lacking, with 73.1% showing poor practices (mean score: 31.72±20.23). Knowledge was associated significantly with the stream of study (p=0.027), attitudes (p=0.007) and practices (p=0.001). Practices were significantly associated with gender (p=0.001), study stream (p=0.009), and pet ownership (p=0.001). The study identified significant gaps in students’ knowledge, attitudes, and practices regarding rabies. Implementing rabies awareness programs for school students in Northern Sri Lanka is highly beneficial.

Keyword: Rabies, Knowledge, Attitude, Practice, Sociodemographic factors

OP-ID 13

Prevalence and antibiotic sensitivity of MRSA in wounds at OPD, Teaching Hospital Jaffna

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Staphylococcus aureus is a major pathogen causing various infections, particularly wound infections, and poses significant challenges due to the emergence of Methicillin-Resistant *Staphylococcus aureus* (MRSA). Regular monitoring of resistance patterns is crucial for developing effective treatment strategies. Due to a higher number of patients visiting the dressing room, we have decided to conduct the study at Teaching Hospital Jaffna (THJ). The aim of this study is to determine the prevalence of MRSA and its antibiotic sensitivity patterns in wounds among outpatient department (OPD) at THJ. An institution-based descriptive cross-sectional study was carried out using 275 patients with wounds attending the OPD, THJ during May to July, 2024. Two swabs were collected from each patient for culture and pus cell quantification. Swabs for culture were inoculated in 7% NaCl broth and incubated overnight at 35°C aerobically. Swabs from NaCl broth were subcultured onto Blood agar and Mac-Conkey agar. Characteristic colonies were identified by standard biochemical tests (SOP). The antibacterial susceptibility of MRSA was tested using the disc diffusion method according to the CLSI guidelines, with cefoxitin (30 µg) discs for MRSA detection. In this study, a total of 275 study participants were included. Among them 114 (41.4%) isolates of *Staphylococcus aureus* were obtained, of which 54 (47.4%) were identified MRSA isolates. Community Acquired MRSA (CA-MRSA) was found in 51.9% (28/54) of non-hospitalized patients. MRSA showed high resistance to erythromycin (85.2%) and highly sensitive to co-trimoxazole (70.4%) and linezolid (77.8%). Increased pus cell counts were significantly associated with culture positivity. Nearly half, 54 (47.4%) of the isolates identified as MRSA, predominantly from non-hospitalized individuals, indicating a community-acquired source. The resistance pattern highlights a concerning trend, particularly against commonly used antibiotics such as erythromycin, while suggesting retained efficacy of co-trimoxazole and linezolid.

Keywords: Prevalence, Methicillin Resistant *Staphylococcus aureus*, Antibiotic Sensitivity Test, Infected skin lesion

Predicting maximum duration of factor VIII replacement therapy efficiency using activated partial thromboplastin time test in Hemophilia A patients at the National Hospital of Sri Lanka

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Hemophilia A is a common hereditary coagulation disorder characterized by a deficiency in clotting factor VIII. Factor VIII replacement therapy is the primary treatment, focusing on maintaining a baseline factor VIII level to proactively prevent bleeding episodes. The aim of the study was to establish an association between aPTT and the time from the latest factor VIII treatment to the collection of blood (TD) to predict the maximum time that could maintain the efficiency of factor VIII replacement therapy using aPTT. Patients attending the Hemophilia clinic, National Hospital of Sri Lanka, were selected for the study (n=61). TD and the latest factor VIII therapy dose taken were obtained from the records. aPTT were performed using coagulation analyzer Coatron-M4 (Licon, S.A.). The data was analyzed using Microsoft Excel IBM_SPSS_version_26. In the first step, correlation bivariate analysis was performed to establish an association between aPTT and TD. Then, Kaplan-Meier survival analysis was performed to find out the maximum days of recurrences after the latest factor VIII administration dose. aPTT showed a significant strong positive correlation with TD ($r=0.820$; $p=0.000$). The Kaplan-Meier survival analysis estimated the median survival time is about 5 days with an initial recurrence of about 2 days, complete recurrence of about 8 days. Results showed that the optimal time that could maintain the efficiency of factor VIII replacement therapy could be predicted using the aPTT in Hemophilia A patients. Thereby, instead of relying on factor assay, a simple aPTT test could be used to monitor the prophylaxis therapy by avoiding frequent testing of factor levels using factor assays to monitor recurrence. However, these findings should be validated by performing the same process with the increased number of Hemophilia A patients.

Keywords: *Hemophilia A, Activated partial thromboplastin time test, Prophylaxis Factor VIII replacement therapy, Kaplan-Meier survival analysis*

OP-ID 15

Changes in serum creatinine, RDW, PDW, Hb and NLR during one month period in ESRD patients undergoing hemodialysis at Nephrology Unit, University Hospital-General Sir John Kotelawala Defence UniversityPerera L. U. K. ^{1*}, Mathusan L.¹, Sheriff M. H. R.², and Kottahachchi D. U.¹¹*Department of Medical Laboratory Science, Faculty of Allied Health Science, General Sir John Kotelawala Defence University, Sri Lanka.*²*Department of Clinical sciences, Faculty of Medicine, General Sir John Kotelawala Defence University, Sri Lanka.**ushanikaushalya27@gmail.com, darsha.uda@gmail.com*

Patients with end stage renal disease (ESRD) encounter complications despite regular hemodialysis (HD). Literature reveals various hematological and biochemical parameters as the predictors of mortality in them. Investigating association between serum creatinine, and Red Cell Distribution Width (RDW), Platelet Distribution Width (PDW), Hemoglobin (Hb), and Neutrophil-to-Lymphocyte Ratio (NLR) to predict post dialysis target creatine would help clinical decision making. Accurately predicting post-dialysis serum creatinine levels is essential for setting therapeutic targets, guiding treatment adjustments, and optimizing patient outcomes. ESRD-HD patients at the Nephrology Unit, University Hospital-General Sir John Kotelawala Defence University (UH-KDU) were studied (n=47). Blood samples were collected at two phases: at a dialysis session conducted after three months from their initial dialysis (Sample_In) and after 5-6 HD sessions in one month (Sample_End). Full Blood Count (FBC) and serum creatinine levels were analyzed using automated analyzers. Statistical analysis was performed using Microsoft Excel IBM_SPSS_version_26. The correlation bivariate analysis was performed to find out possible correlations among the parameters between the two phases and, regression analysis was performed to develop equations to predict one parameter from the other. Moderate to weak significant positive correlations were obtained between parameters in two phases, notably a weak positive correlation between serum creatinine-Sample_End and PDW-Sample_In ($p < 0.05$; $r = 0.291$). Regression analysis produced a predictive equation for the serum creatinine after one month: $\text{Creatinine End} = 0.350 * (\text{PDW_In}) + 0.642 * (\text{Creatinine_In}) - 2.281$ ($R = 0.516$). The results show the potential for predicting target serum creatinine after 5-6 HD sessions by an equation using initial values of serum creatinine and PDW. This equation provides a straight forward and practical tool for clinical use, relying on readily available parameters. However, these findings need validation by further studies.

Keywords: End Stage Renal Disease hemodialysis), Red Cell Distribution Width (RDW), Platelet Distribution Width (PDW), Neutrophil to Lymphocyte Ratio (NLR), serum creatinine.

Assessing accuracy and validity of urine dipstick test in chronic kidney disease patients

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Proteinuria is a critical marker of chronic kidney disease. It is usually determined using the urinary protein to creatinine ratio (UPCR) and urinary albumin to creatinine ratio (ACR). The urine dipstick test (UDT) is currently used as a preliminary screening tool for proteinuria. Aim of this study is to assess the accuracy and validity of UDT for proteinuria compared to UPCR in chronic kidney disease (CKD) patients with proteinuria. UDT was performed on 111 random urine samples of CKD patients attending Nephrology Unit at Teaching Hospital Jaffna, while obtaining the UPCR test results from the hospital's Chemical Pathology Laboratory. Sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of UDT were calculated, and the correlation between UDT and UPCR was assessed using Pearson's correlation coefficient. Out of 111 patients, 89.19% had proteinuria while 10.81% did not. There was a strong significant correlation in protein concentration with UPCR ($r= 0.804, p< 0.001$) and dipstick reading categories ($r=0.706, p<0.001$). Using "Nil" as the cut-off in UDT for UPCR<15 mg/mmol, the test showed high sensitivity (91.66%) and NPV (98.90%). As the dipstick reading category and UPCR cutoff value increased, sensitivity decreased while specificity increased. For "+2" to identify UPCR 100-300 mg/mmol, there was 33.33% sensitivity, 61.90% specificity, 21.95% PPV and 74.28% NPV. This study showed that the UDT demonstrates high sensitivity and specificity with a cut-off of \geq 'trace' to identify proteinuria (UPCR>15 mg/mmol) in CKD patients. It is more effective in both detecting and ruling out proteinuria and can be used as a screening tool for identifying individuals with proteinuria from those without.

Keywords: CKD Patients with proteinuria, Protein to creatinine ratio, Urine dipstick test

Identification of bacteria in ear infection patients attending ENT clinic, Teaching Hospital, Jaffna

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Ear infections pose a significant public health concern in developing nations, impacting both pediatrics and adults. Bacterial pathogens are the primary cause, leading to preventable hearing loss and other severe intracranial complications. Understanding the local bacterial prevalence is essential for formulating effective treatment strategies, as bacterial types vary regionally and overtime. This study was aimed to identify the diversity and prevalence of bacteria causing ear infections in suspected ear infection patients attending the ENT Clinic at Teaching Hospital, Jaffna. An institution-based cross-sectional descriptive study was conducted at the ENT clinic, Teaching Hospital, Jaffna. Patients enrolled with ear discharge and clinical suspicion of bacterial infection, as verified by physicians. Specimen processing and bacterial identification followed standard protocols from the “Laboratory Manual in Microbiology” by the Sri Lankan College of Microbiologists. Specimens were cultured on Blood, MacConkey and Chocolate agar media. Data were analyzed using SPSS (Version 21) with descriptive statistics. Out of 155 patients, 139 (89.68%) had culture-positive results. Among these, 62 (44.60%) showed pure growth and mixed growth in 77, yielding a total of 234 organisms. Of these, 154 (65.82%) were identified as pathogens, including: *Pseudomonas* spp. (44.80%), *Enterobacteriaceae* (26.63%), *Staphylococcus aureus* (16.23%), *Acinetobacter* spp. (5.20%), and *Candida* spp. (7.14%). The remaining 80 (34.18%) were non-pathogens, comprising coagulase-negative *Staphylococci* (60.00%), *Corynebacterium* spp. (23.75%), aerobic spore forming bacteria (12.50%), and non-hemolytic *Streptococcus* spp. (3.75%). The study highlights a high culture-positive rate (89.68%) with a wide range of bacterial species, with *Pseudomonas* spp. as the predominant pathogen. This emphasizes the importance of accurate microbial diagnosis and targeted treatment. Ongoing surveillance is necessary to monitor the local microbial landscape, especially in areas with limited access to culture facilities.

Keywords: Ear infections, Prevalence, Bacterial etiology, Pathogenic bacteria, *Pseudomonas* spp.

Evaluation of nutrient agar and Antibiotic Assay Medium 1 as cost-effective alternatives to Mueller-Hinton agar for antibiotic sensitivity testing

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The antibiotic sensitivity test (ABST) is a crucial tool in clinical microbiology for determining the most effective antibiotic to treat infections. Though Mueller-Hinton Agar (MHA) is the standard culture medium used for ABST in most clinical laboratories, this study investigates the efficacy of Antibiotic Assay Medium 1 (AAM1) and Nutrient Agar (NA) as cost-effective alternatives to MHA for commonly isolated bacteria pathogens in the microbiology laboratory. This is a laboratory-based experimental study. Pure and fresh cultures of control strains including *Staphylococcus aureus* (ATCC 25922), *Escherichia coli* (ATCC 2785) and *Pseudomonas aeruginosa* (ATCC 25923) were inoculated separately into MHA, AAM-1 agar and NA. Selected antibiotic panels such as *Staphylococcus aureus*: co-trimoxazole (SXT), clindamycin (DA), cefoxitin (FOX), *Escherichia coli*: cefotaxime (CTX), gentamicin (CN), ampicillin (AMP), and *Pseudomonas aeruginosa*: ceftazidime (CAZ), ciprofloxacin (CIP) and CN) were used to perform ABST following the standard CLSI disk diffusion method. The test was repeated five times to ensure precision. After overnight incubation at 37 °C, the zones of inhibition (ZoI) were measured. The statistical analysis was performed to compare the mean values using one-way ANOVA, with $p < 0.05$ considered statically significant. The test results showed that *Staphylococcus aureus* exhibited a statistically significant difference in ZoI for cefoxitin only on NA ($p = 0.000$). For *Escherichia coli*, both AAM-1 and NA showed non-significant differences in ZoI for all tested antibiotic panels. However, *Pseudomonas aeruginosa* demonstrated significantly different results for gentamicin on both NA ($p = 0.000$) and AAM-1 ($p = 0.002$) in comparison with the standard MHA. NA and AAM-1 showed potential as cost-effective alternatives to Mueller-Hinton Agar, particularly for *Escherichia coli* and *Staphylococcus aureus*, especially in resource-limited laboratories. Further validation is necessary before widespread adoption in clinical settings.

Keywords: *Antibiotic Sensitivity test (ABST), Muller-Hinton Agar, Antibiotic Assay medium 1, and Nutrient agar.*

Evaluation of synergistic anti-diabetic effects of different combinations of four selected plants (*Terminalia arjuna*, *Syzygium cumini*, *Ficus benghalensis* and *Salacia reticulata*) using yeast cell uptake and toxicity assay in Brine Shrimp (*Artemia salina*)

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Diabetes mellitus is rising globally and causing significant mortality that highlights the urgent need for therapeutic approaches. Herbal antidiabetic medications offer promising alternatives to synthetic treatments. Traditional Sri Lankan herbal plants, such as *Terminalia arjuna*, *Syzygium cumini*, *Ficus benghalensis*, and *Salacia reticulata*, have demonstrated significant antidiabetic properties. This study aims to investigate the synergistic antidiabetic effects and toxicity of different combinations of these plants to enhance therapeutic efficacy against diabetic mellitus using Yeast cell uptake and brine shrimp toxicity assay. Fifteen different combinations of *T. arjuna*, *S. cumini*, *F. benghalensis*, and *S. reticulata*, were prepared using factorial design (number of combinations+1= $2^n = 2^4$). Combined plant decoctions screened for toxicity using Brine Shrimp assay. Yeast cell uptake assessment was done for anti-diabetic activity. All procedures were conducted in accordance with protocols outlined in OECD guidelines. Among the 15 different combinations, the combination containing *F. benghalensis* and *S. reticulata* exhibited lowest glucose uptake of 36.98% and low Brine Shrimp LC50 value of 50 µg/ml. The combination with lowest glucose uptake and less toxicity shows synergistic antidiabetic effect of different combinations of these selected four plants, that can be used as an alternative herbal medication over synthetic antidiabetic medications. The result of the combination of *F. benghalensis* and *S. reticulata* shows promise for synergistic antidiabetic activity, underscoring the potential of natural plant decoctions in diabetes therapies.

Keywords: Synergism, Diabetes, Toxicity, Decoctions, Assays

Development of an economical and sustainable protein powder, using natural ingredients for Sri Lankan athletes

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Protein is athletes' most important nutritional component to repair and protect their muscles. This study aims to produce protein supplements at a low cost using local ingredients for Sri Lankan athletes because all the supplements available on the market are expensive. After protein content analysis by Kjeldahl method, soybeans (0.55 kg), mushrooms (1.500 kg), and millet (0.200 kg) were used as main ingredients for the preparation of 1 kg of powder. All the ingredients were properly powdered and mixed in special lab processes. Energy (calories and kilojoules), protein content, fat content, carbohydrate content, and moisture content were evaluated for the final product. Sensory analysis, shelf-life testing, and determination of water-soluble ash content tests were carried out for this product. The final product was dissolved in water and used in three ways for sensory analysis (A-Supplement 1 tablespoon dissolved in 300 ml water, B-Supplement 2 tablespoon dissolved in 300 ml water, C-Supplement 3 tablespoon dissolved in 300 ml water). A sample of 30 students was used to test the texture, color, aroma, taste, melting, and after taste of the product, and the results were analyzed using descriptive statistics and an ANOVA test. According to the Kjeldahl method results of protein content analysis, protein content in soybeans, mushrooms and millet was 27%, 14%, and 25% respectively. Further, the final product had a nutritional profile with energy content of 329 kcal (1375 kJ) per 100 g, a protein content of 31.9%, 12.6% of fat, 25.6% of carbohydrates, 10.1% of sugar content and finally with a moisture content of 15.83%. Statistical analysis revealed that there was a significant difference between the above six components ($p < 0.05$). Sample B is the best one because the above statistical test shows the highest mean (Mean \pm Standard Deviation = 25.07 ± 3.18). Cost analysis proved that this supplement can be produced at a low cost of Rs. 1825 per kg. This study shows that a protein-based balanced protein supplement powder can be developed using local low-cost ingredients. As a result, the developed nutritional powder provides a balanced blend based on protein. In the future variations of flavors of this powder can be developed.

Keywords: *Local ingredients, Low cost, Protein supplement*

Effect of eight weeks aerobic endurance training (swimming) on long-distance freestyle performance among intermediate male swimmers

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Swimming strokes are the different techniques used by swimmers to move through the water efficiently. In the last 2023 inter-university games, it was observed that the intermediate male team at Sabaragamuwa University had a problem with their performance in events of 200 meters and other long-distance events in freestyle. The problem was that they had considered the timing gap, lap by lap compared to other top players. Therefore the objective of the study was to find out the effect of eight weeks of aerobic endurance training (swimming) on long-distance freestyle performance among intermediate male swimmers in Sri Lanka. Two male intermediate long-distance swimmers from Sabaragamuwa University were selected using the purposive sampling technique to take part in the research. The training program was conducted over an eight-week period involving two intermediate male swimmers. Both samples completed training three days per week and two hours per day. The level of tested swimmers was assessed using the swimming beep test beginning and the end of the periodization as pre-test and post-test. For descriptive analysis, only data obtained at maximum loads in both pre and post-tests were accepted. As expected study results showed that there was significant improvement evidenced in the post-test more than the pre-test. According to the norms table of the swimming beep test, both samples' performance was poor in the pre-test. However, in the post-test, both samples showed average performance. The above study concludes that the enhancement of the aerobic endurance of freestyle long-distance intermediate male swimmers at Sabaragamuwa University of Sri Lanka indicates the necessity to improve the performance of swimmers with proper training.

Keywords: *Aerobic Endurance, Freestyle, Long Distance, Swimming Beep Test*

Effect of strength training on selected physical fitness and anthropometric variables of school's kabaddi players

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Kabaddi is a vigorous sport that is done entirely on the basis of body strength, techniques and it requires high physical fitness. The present study was to find out the effect of strength training on selected physical fitness and anthropometrical variables of kabaddi players. Thirty male school kabaddi players with age ranging from 17-20 years were randomly selected from Sabaragamuwa province in Sri Lanka. The subjects were randomly divided into an experimental group (n=15) and a control group (n=15). The selected physical fitness parameters (agility, explosive strength, strength endurance and maximum strength) and anthropometric parameters (thigh, arm and chest circumferences) were carried out before (pre-test) and after the twelve weeks training period (post-test). The experimental group underwent specific strength training sessions for three (03) days in a week for a total twelve (12) weeks. The control group did not participate in any specific training as the experimental group. Paired t-test was used to determine the mean differences of the physical fitness and anthropometric parameters in pre and post-test. where the significant variables were selected based on p-value (<0.05). The results showed a significant difference between the improvement in the experimental group after strength training when compared to pretest. Therefore, strength training has a positive effect on enhancing the agility, explosive strength, strength endurance, maximum strength and body circumferences namely, thigh, arm, and chest. The findings suggest the potential of using strength training to improve agility, explosive strength, strength endurance and maximum strength, and thigh, arm, and chest circumferences particularly in male school kabaddi players.

Keywords: *Kabaddi, Strength, Anthropometric, Physical fitness*

Prediction of playing ability in Taekwondo from selected anthropometrical physical fitness and physiological characteristics among varsity Taekwondo sparring players in Sri Lanka

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Taekwondo sparring is an exciting part of training that allows practitioners to put their punches and kicks into one-on-one or multiple-person situations. As the sport grows in popularity, understanding the complex nature of player performance becomes critical. Therefore, this study aimed to predict the Taekwondo playing ability of varsity Taekwondo sparring players using their anthropometrics, physical fitness, and physiological parameters. To achieve the purpose, thirty female Taekwondo players, aged between 20 to 25 were selected from the universities of Sri Lanka. All the players had at least three years of playing experience and represented their university teams. In this study, thirteen anthropometric factors (standing height, weight, leg length, foot length, hand length, calf girth, thigh girth, chest girth, waist girth, forearm girth, upper arm girth, thigh skinfold, calf skinfold), nine physical fitness qualities (muscular endurance, muscular strength, cardiovascular endurance, flexibility, power agility, speed, coordination, hand and foot reaction time), and three physiological parameters (resting heart rate, breath hold time, and peak expiratory flow rate) were selected as independent variables. All the variables were examined by a standardized test using scientifically approved equipment. The dependent variable of playing ability was assessed by the three qualified Taekwondo referees and it was determined by four skills: kicking, punching, attacking, and blocking during the match situation. The collected data was analyzed by stepwise multiple regression analysis with SPSS software. The results revealed that cardiovascular endurance, coordination, reaction time, flexibility, leg length, foot length, resting heart rate, breath hold time, and peak expiratory flow were highly correlated with playing ability. From the results it was concluded anthropometrical, physical fitness physiological parameters positively impact the Taekwondo playing ability of varsity taekwondo sparring players in Sri Lanka.

Keywords: *Taekwondo, Anthropometric, Physical fitness, Physiological, Sparring*

Prevalence and importance of choosing health and physical education subject in Tamil- Medium secondary schools in the Colombo Central Zone, Sri Lanka

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In 1932, C.W.W. Kannangara, known as the father of free education, incorporated health as a subject in the Kanthassa education system within the Sri Lankan curriculum. The subject was further developed in 1980 and subject named as Health and Physical education. The aim of the study is to assess prevalence of the students who selected the Health and Physical education as a subject and the participants' view about the importance of this subject among Tamil medium Schools of Colombo Central Zone. Mixed methods research design was used. There are 22 Tamil-medium secondary schools in the Colombo Central Zone, of which 12 schools have been selected as samples. Totally 92 student samples were selected by using Krejcie Morgan sampling method along with 12 principals, 12 vice-principals, and 24 teachers. A simple transliteration method was used, and data were collected using questionnaires from the students, and interviews with teachers and principals, and data from documents. The collected data were analyzed descriptively using tables and graphs. The prevalence of the students who selected the Health and Physical education as the subject among these school is 24 (mean value). The benefits of studying this subject encountered by the participants are: students may acquire skills in goal planning, time management, self-monitoring, reasoning, problem-solving, flexibility, accountability, attention control, and self-confidence. Also, it was suggested that students' achievement and logical thinking abilities can be enhanced through this subject. Many participants stated that if the students studying this subject, it may be benefited for their wellbeing. Since the percentage of choosing this subject is less, it was recommended that students and parents in the study area to be educate regarding the benefits of this subject.

Keywords: *Health and physical education, Sri Lankan curriculum, Benefits, Health subject, Health science, School*

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