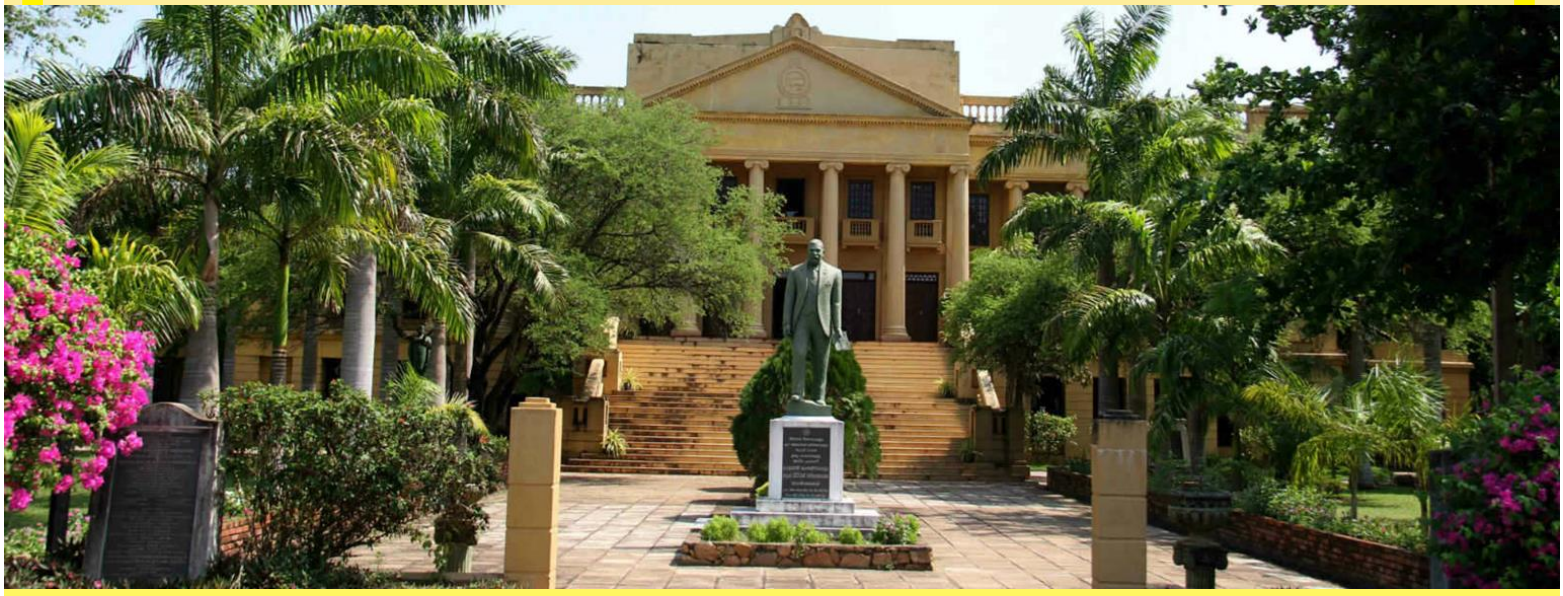
ISymRU 2025

Beyond Boundaries: Advancing Human and Planetary Well-being

International Research Symposium of Rajarata University of Sri Lanka

8th & 9th October 2025

Abstract Book



Organized by:

Faculty of Medicine & Allied Sciences, Rajarata University of Sri Lanka

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Cover and page design by:

Prof. H T W Weerakoon, *Professor in Biochemistry, Faculty of Medicine & Allied Sciences, Rajarata University of Sri Lanka*

Page Layout by:

Dr. A M M V Kumari, *Senior Lecturer, Department of Physiology, Faculty of Medicine & Allied Sciences, Rajarata University of Sri Lanka*

Dr. I D Samarawickrama, *Temporary Assistant Lecturer, Department of Physiology, Faculty of Medicine & Allied Sciences, Rajarata University of Sri Lanka*

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Acknowledgements

The Organizing Committee of ISymRU 2025 extends our sincere gratitude to all who contributed to the success of this year's International Research Symposium of Rajarata University of Sri Lanka. We gratefully acknowledge our keynote speaker, Mr. Rohan Pethiyagoda, and our chief guest, Senior Professor Nilanthi de Silva, for gracing the symposium while fostering academic excellence and a vibrant culture of research and innovation within our university.

Our heartfelt appreciation goes to the session chairs, resource persons, abstract reviewers, and judging panels for generosity in sharing their time, expertise, and constructive feedback. We also extend our deep appreciation to the advisory board of ISymRU 2025 for their invaluable guidance and encouragement throughout this process, and to the administrative staff of the university for their tireless support.

We warmly thank all authors and presenters for sharing their research findings at ISymRU 2025 and wish them all the success in their research journeys. May this symposium serve as a platform for inspiration, collaboration, and the advancement of knowledge.

Our sincere appreciation is also extended to the academic and academic-supporting staff of Rajarata University of Sri Lanka for their unwavering commitment, and support toward the success of this event.

We gratefully acknowledge the financial and logistical support provided by individuals, institutions, and sponsors, whose contributions have been instrumental in organizing this symposium successfully.

This year's symposium stands as a testament to the collective effort, dedication, and spirit of the Rajarata University research community and its partners, united under the theme; *"Beyond Boundaries: Advancing Human & Planetary Well-being."*

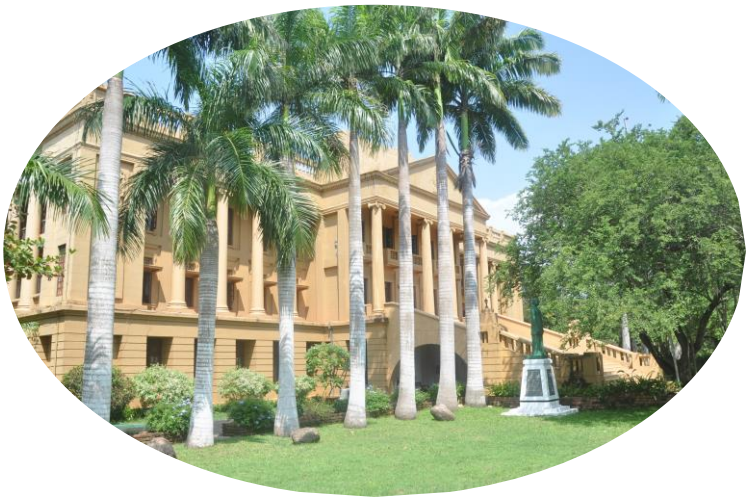
ISymRU 2025

Rajarata University of Sri Lanka (RUSL), established in 1996 and located in Mihintale near the historic city of Anuradhapura, has evolved into a leading centre for higher education and research. Guided by its vision "to be a centre of excellence in higher education and research" RUSL has, over the past two decades, made significant contributions through impactful research and innovation.

The International Research Symposium of Rajarata University of Sri Lanka (ISymRU) serves as the flagship annual research event of the University, providing a platform for scholars, scientists, and professionals from Sri Lanka and around the world to share knowledge, present discoveries, and forge collaborative networks.

ISymRU 2025, held under the theme "*Beyond Boundaries: Advancing Human & Planetary Well-being*," emphasises the university's commitment to addressing challenges that transcend disciplines and borders. By uniting researchers, practitioners, and policymakers, the symposium aims to promote interdisciplinary dialogue and innovation that advance both human health and planetary sustainability.

This year's symposium offers a valuable opportunity to highlight region-specific research and innovations, while also contributing meaningfully to global conversations on sustainability and well-being. ISymRU 2025 stands as a vital meeting point where local insights merge with universal solutions—advancing knowledge that truly goes beyond boundaries.



Message from the Chancellor

It is a privilege to be able to repeatedly congratulate the research process, which is the mirror of the university's progress. Amidst various challenges, this 2025 Research Summit, organized by our university, is a tool to gather new knowledge and practical applications needed for the future of the country. On the one hand, this will create a creative, research-intensive and knowledgeable group needed for the future of the country, while on the other hand, new products that can compete with the world will be introduced to society.

We stand by the position that research should continue to address current national and international challenges, as well as the various problems faced by human beings. The quality of the university also depends on that process.

When we look at this commemorative event, we can clearly see the new knowledge and social responsibilities that the university has acquired in its thirtieth year of university history. Through this, I expect to inspire both novice and experienced researchers. I congratulate everyone involved in this research in every way.

Rev. Eathalwetunuwewe Gnanathilaka Thero

The Chancellor

Rajarata University of Sri Lanka

Message from the Acting Vice Chancellor

It gives me immense pleasure to extend my warmest greetings to all participants, organizers, and contributors to this distinguished Research Symposium. The publication of this proceedings book marks a significant milestone in our collective pursuit of academic excellence and innovation.

Research serves as the cornerstone of any thriving academic institution. It fuels curiosity, encourages critical thinking and drives the advancement of knowledge that benefits society at large. This symposium is a testament to the vibrant research culture nurtured within our university and among our academic partners. It provides a vital platform for scholars, researchers and students to share ideas, present their findings and engage in meaningful discourse across disciplines.

The diversity and depth of the work presented in these proceedings reflect the commitment of our academic community to address complex challenges and explore new frontiers of knowledge. I am particularly heartened to see the collaborative spirit evident in many of the contributions—an essential ingredient for impactful, real-world research.

I commend the organizing committee for their dedication in bringing this symposium to fruition and for ensuring the quality and integrity of this publication. To the authors, your rigorous efforts and intellectual contributions are deeply valued and appreciated.

As we turn these pages, may we be inspired by the innovation, insight, and determination represented in every paper. Let this be not only a celebration of what has been achieved but also a call to continue our shared journey of discovery.

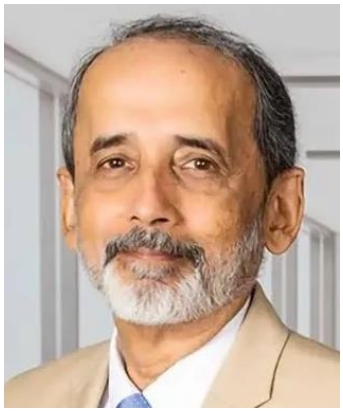
With best wishes for continued success in your research endeavors.

Dr. P H G Janaka Pushpakumara

Acting Vice Chancellor

Rajarata University of Sri Lanka

Message from the Keynote Speaker



If you read this year's Budget Estimates published by the Treasury, you will see national expenditure, totalling Rs 8.8 trillion, allocated among 338 'heads'. What is remarkable about these expenditure heads is that for the most part, the concerned institutions are impervious to science or that science is irrelevant to them. Worse, few of them are even aware of the others: they operate in silos.

That must change. Beyond Boundaries aptly reflects that need; and there are no better places to transgress boundaries than universities. But words are not enough: curriculums need to be broadened. Engineers need to learn evolutionary science and be inspired by design ideas from the natural world. Doctors and lawyers must learn statistical tools like Bayesian Inference to better understand diagnostic evaluation and evidence, respectively. Economists and sociologists would both benefit from an improved understanding of societal behaviour through, for example, public goods games. Even as the advancement of science proceeds apace, demanding ever more specialization, we need to recognize that social benefits flow best when boundaries are violated.

I hope that this year's Symposium will cut through some of those boundaries, widening the horizons of RUSL graduates, empowering them to transform the functions of those 'heads'. Meaningful national progress is otherwise impossible.

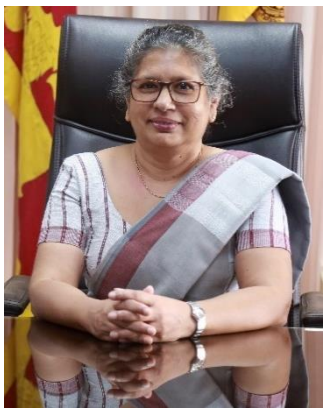
Mr. Rohan Pethiyagoda

Research Associate

Ichthyology Section, Australian Museum

Sydney, Australia

Message from the Chief Guest



I write to express my warm felicitations and best wishes to the Rajarata University of Sri Lanka on the occasion of ISymRU 2025. While the main function expected of our state universities in Sri Lanka remains the dissemination of knowledge through the undergraduate programmes offered by us, we cannot forget that postgraduate education and the creation of new knowledge through research is also an integral part of our mandate. The engagement of academic staff and students, both undergraduate and postgraduate, in high quality research that has the potential to improve the lives of our fellow citizens, and support sustainable development in all its many facets, is an inescapable obligation.

I congratulate the Rajarata University of Sri Lanka on highly praiseworthy efforts to promote your research culture, despite the constraints in financial, physical and human resources that all Sri Lankan universities have faced over the past few years. I am sure that ISymRU 2025 will provide a great platform for a vibrant exchange of ideas and research findings, as an event that will inspire all the university's students and early career researchers.

Senior Professor Nilanthi de Silva

Vice Chancellor

University of Kelaniya, Sri Lanka

Message from the Symposium Chair

It is with great pleasure that I extend my warmest greetings to all the authors contributing to the proceedings of the ISymRU 2025, organized by the Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka. This conference serves as a vital platform for the exchange of idea, the presentation of novel research and the fostering of collaboration among professionals from across the scientific community.

The abstracts compiled in this book reflect the depth and diversity of inquiry being undertaken in multidisciplinary fields under the theme of "Planetary Well-being". Each submission represents a meaningful contribution to the advancement of knowledge, and collectively, they highlight the dynamic progress and intellectual rigor that define diverse fields.

We are confident that this compilation will serve not only as a record of the work presented but also as a lasting resource for continued exploration and collaboration. We hope it inspires new perspectives, sparks dialogue and encourages partnerships that extend well beyond the boundaries of this event.

I extend my sincere appreciation to all authors who submitted their work, to the reviewers and editorial and publication committees for their dedication to maintaining the highest academic standards and to the organizing team whose efforts have made this event possible.

We hope these proceedings will serve as a valuable resource for academics, researchers, and practitioners alike, fostering meaningful advancements across multidisciplinary fields.

Professor Subhashinie Senadheera

Chairperson of ISymRU 2025

Rajarata University of Sri Lanka

Message from the Symposium Co-secretaries


It is with great pleasure that we extend our warm greetings to all participants of ISymRU 2025. This event stands as a testament to our university's unwavering commitment to advancing research, innovation and scholarly excellence. The symposium provides a vibrant platform for academics, researchers and professionals from diverse disciplines to exchange ideas, share knowledge and forge collaborations that address both local and global challenges. It is through such intellectual dialogue and collective effort that we can generate impactful solutions for the betterment of society.

We take this opportunity to express our sincere appreciation to the organizing committee, reviewers, all resource persons, presenters, participants and sponsors for their invaluable contribution towards the success of this symposium and all contributors who have worked tirelessly to bring this symposium to fruition. We firmly believe that the discussions, insights and collaborations fostered through this event will open new avenues for research and make a significant contribution to the academic and developmental progress of our nation. May this event be a source of inspiration and a stepping stone for greater achievements in the future.

We warmly welcome you all to ISymRU 2025 and wish you a productive and memorable experience.

Dr. Dinesha Jayasundara & Ms. Thushara Wanasinghe

Co-Secretaries of ISymRU 2025

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Oral Presentations

A/OP/01

Allelopathic Effects of *Pistia stratiotes* L. Leaf Extracts on Germination and Emergence of Rice, Weedy Rice and Saramollagrass Under In-Vitro Conditions

Kirushananth N[1], Mathiventhan U[1]

[1]*Department of Botany, Faculty of Science, Eastern University, Sri Lanka*

Background: Allelopathy refers to the biological phenomenon in which plants release chemicals known as allelochemicals into the environment that influence the growth, survival, or reproduction of nearby organisms, typically other plants. *Pistia stratiotes* is a free-floating aquatic plant that frequently invades freshwater ecosystems competing with native vegetation, often becoming a serious ecological concern.

Objective: The objective of the research was to evaluate the allelopathic effect and conduct a phytochemical analysis of aqueous and ethanolic leaf extracts of *P. stratiotes* on the germination parameters of rice (*Oryza sativa* L.), weedy rice (*Oryza sativa* L. *f. spontanea*), and saramollagrass (*Ischaemum rugosum Salisb.*) seeds.

Methods: The experiment was conducted in petri dishes using ten selected seeds of each species, treated separately with different concentrations of plant extracts with five replicates: 250 ppm, 500 ppm, and 1000 ppm. The control treatment was treated with sterile distilled water. The germination parameters including seed germination percentage, plumule length, and radicle length were studied.

Results: The results revealed that the germination percentage of rice seeds was enhanced by 22% with the 500ppm aqueous extract, suggesting a mild stimulatory effect at moderate concentration, while ethanolic extract at 1000 ppm significantly inhibited germination by 42%. The growth of plumule and radicle was positively affected by low-concentration aqueous extracts however suppressed by high-concentration ethanolic extracts (P: 2.84 ± 0.274; R: 4.21 ± 0.317 at 250 ppm aqueous vs P: 1.23 ± 0.146; R: 1.78 ± 0.208 at 1000 ppm ethanolic). In weedy rice, germination was slightly promoted by the 250ppm aqueous extract; however, inhibited at higher concentrations, particularly with the ethanolic extract, which resulted in a 33% reduction in germination. *I. rugosum* seeds showed the highest sensitivity, with germination reduced by 18% in the aqueous and 90% in the ethanolic treatments at 1000 ppm. Overall, the ethanolic extract exhibited a stronger inhibitory effect on seed germination and emergence compared to the aqueous extract. The inhibitory effect was concentration-dependent ($p < 0.05$), and *P. stratiotes* extracts demonstrated potential selective-allelopathic activity.

Conclusion: These findings underscore the potential application of *P. stratiotes* extracts as a natural herbicide for sustainable weed management in rice cultivation.

Keywords: Allelopathic effect, Aqueous extract, Ethanolic extract, Germination parameters, *Pistia stratiotes.*

A/OP/02

Probiotic Potential of Actinomycetes from Shrimp Gut and Shrimp-Farming Pond Sediments

Marasinghe MGSB[1], Edirisinghe EAAD[1]

[1]*Department of Microbiology, Faculty of Science, University of Kelaniya, Sri Lanka*

Background: The use of probiotics for improving water quality and enhancing productivity is an emerging eco-friendly strategy in shrimp farming. Heterotrophic bacteria inhabit shrimp-farming-pond sediments, and the shrimp gut exhibit remarkable probiotic potential through the production of extracellular enzymes involve in bioremediation of organic waste and digestion of complex nutrients in feed. Actinomycetes is a group of heterotrophic bacteria reported to have strong extracellular enzyme-producing capabilities. However, strains associated with shrimp-farming ponds and the shrimp gut remain underexplored in Sri Lanka.

Objective: This study aimed to evaluate the probiotic potential of Actinomycetes isolated from the gut of cultured shrimps (*Litopenaeus vannamei* and *Penaeus monodon*) and pond sediments in terms of their extracellular enzyme production.

Methods: Samples were collected from shrimp-farming ponds in Mundalama, Sri Lanka. Intestinal segments of shrimps were obtained aseptically. Both intestinal and sediment samples were heat-treated (50 °C, 60 min) to eliminate less heat-resistant non-Actinomycetes. Then, $CaCO_3$ was added into the samples for enriching Actinomycetes. After the enrichment, isolation was carried out using the serial dilution method on starch casein agar supplemented with selective agents, cycloheximide (80 µg/ml) and nalidixic acid (75 µg/ml). Colonies exhibiting characteristic morphology of Actinomycetes were purified and confirmed with biochemical tests. All isolates were screened for extracellular enzymes-protease, amylase, cellulase, and lipase—on the formation of a halo zone on skim milk, starch, carboxymethyl cellulose, and phenol red–olive oil agars, respectively, following spot inoculation. Enzymatic activity was quantified as the Enzymatic Index (EI), the ratio of halo zone to colony diameter.

Results: Nineteen isolates were obtained (fourteen sediment-derived and five gut-derived), of which ~80% exhibited notable enzymatic activity (EI ≥ 2.0) for at least two enzymes. Cellulase activity was detected in 68% of the isolates, with the maximum EI of 8.2. Amylase and protease activities were observed in 73% of the isolates, with maximum EI of 5.1 and 3.8, respectively. Although lipase activity was the most prevalent (89%), its maximum EI (2.7) was lower than the lowest EI of other enzymes tested. All the gut-derived isolates exhibited four of the enzyme activities.

Conclusion: Strong extracellular enzymatic activity exhibited by Actinomycetes from shrimp-farming ponds and the gut of cultured shrimp suggests their high probiotic potential and suitability for inclusion in shrimp feed formulae.

Keywords: Actinomycetes, Extracellular enzymes, Shrimp farming

A/OP/03

Evaluation of the Willingness to Pay for Crop Insurance among Paddy Farmers in Kurunegala District, Sri Lanka

Erabadupitiya HRKN[1], Kuruppu IV[1], Udayanga NWBAL[2], Wimalaweera GNI[1]

[1]*Department of Agribusiness Management, Faculty of Agriculture and Plantation Management, Wayamba University of Sri Lanka*
[2]*Department of Bio-Systems Technology, Faculty of Agriculture and Plantation Management, Wayamba University of Sri Lanka*

Background: Crop insurance is a common risk management tool that helps farmers cope mainly with crop losses. However, its adoption among Sri Lankan paddy farmers remains low.

Objective: This study aimed to investigate the perceptions and Willingness to Pay (WTP) for crop insurance schemes among the paddy farmers in Kurunegala district.

Methods: A total of 248 paddy farmers from Kurunegala district were selected using the stratified random sampling approach. A pre-tested structured questionnaire and choice cards were used for primary data collection. Socio-demographic data, farming-related information, farmers' perceptions and attitudes toward crop insurance were analyzed using descriptive statistics and the Conditional Logit Model (CLM).

Results: The results revealed that the majority of respondents (78%) were males engaged in paddy farming, while the most farmers (63%) earned between LKR 50,000 to 75,000 as monthly household income. According to the results, 91% of farmers agreed that the claim form filling process should be made easier, and 88% believed that all crops must be notified under the insurance schemes, identifying these as the key challenges faced by farmers in adopting crop insurance. The analysis of the choice experiment indicated that farmers have a high Marginal Willingness to Pay (MWTP) for attributes ensuring coverage in the absence of hazards, reflecting a strong preference for comprehensive insurance schemes. However, the assessment method for crop damage revealed a negative coefficient (-13.4; $p<0.001$), suggesting a need for improvement in loss assessment procedures to enhance the appeal of insurance schemes.

Conclusion: Overall, the findings underscored the importance of implementing comprehensive and responsive crop insurance schemes to improve farmers' resilience to climate change and assure the sustainability of paddy production in Sri Lanka. Improving claiming procedures and loss assessments can help to overcome key barriers, leading to greater adoption of crop insurance and better financial protection for farmers against climate risks.

Keywords: Choice experiment, Crop insurance, Willingness to Pay

A/OP/04

Agro-Ecotourism Opportunities and Challenges in Village Tank Cascade Systems (VTCS): A Case from Hiriwaddunna Village, Anuradhapura, Sri Lanka

Gunasekara MVJ[1], Kuruppu IV[1], Guruge TPSR[1], Gurusinghe DC[1], Herath HMLK[1]

[1]*Department of Agribusiness Management, Faculty of Agriculture and Plantation Management, Wayamba University of Sri Lanka*

Background: Agro-ecotourism is an emerging model that links sustainable agriculture with eco-friendly tourism, offering opportunities to enhance rural livelihoods while conserving natural resources. In Sri Lanka, the Village Tank Cascade Systems (VTCS) an indigenous irrigation system with rich agro-ecological value provide a unique setting for the development of agro-ecotourism.

Objective: This study aims to evaluate the agro-ecotourism potential of VTCS by analyzing market structure, stakeholder roles, and key opportunities and challenges.

Methods: The research was carried out in Hiriwadunna village located, within the Bellankadawala cascade system of the Anuradhapura District. Primary data were collected through face-to-face interviews using a semi-structured questionnaire with 110 respondents, including tourists, village house owners, boat riders, cart riders, and craft producers. The Structure-Conduct-Performance (S-C-P) framework and SWOT analysis guided the evaluation of market dynamics. Additionally, the Relative Importance Index (RII) was used to rank the top three perceived prospects and challenges based on stakeholder responses.

Results: The findings reveal an oligopolistic market structure with limited service differentiation and unequal income distribution. Weak pricing systems, lack of targeted marketing, and minimal institutional support limit the growth and environmental potential of the sector. Nevertheless, agro-ecotourism in VTCS regions promotes biodiversity, traditional farming practices, and community engagement. Using the RII, the top three prospects identified were: community-based livelihood generation (RII = 0.912), agro-biodiversity and natural landscape conservation (RII = 0.894), and cultural and agricultural heritage promotion (RII = 0.877). The main challenges included poor sanitary infrastructure (RII = 0.915), seasonal fluctuations in tourist activity (RII = 0.898), and human-wildlife conflict (RII = 0.872).

Conclusion: The study concludes that agro-ecotourism in VTCS areas holds significant potential if supported by improved infrastructure, vocational training, environmental protection measures, and policy frameworks that integrate agricultural sustainability and rural development. Addressing these barriers can enhance ecological stewardship and promote climate-resilient livelihoods in Sri Lanka's dry zone farming communities.

Keywords: Agro-ecotourism, Structure-conduct-performance, Village tank cascade systems

A/OP/05

Effect of Artificial Light Spectrum on Plant Vigour of Tissue Culture *Anubias hastifolila* Plant

Perera MDS[1], Fernando MGC[2], Tennakoon TMSA[3]

[1]*Department of Biosystems Technology, Faculty of Technology, Eastern University, Sri Lanka*
[2]*Ruvini Aqua Plants Lanka (Pvt) Ltd, P.O. Box 10400, 55/6 Koralawella, Moratuwa, Sri Lanka*
[3]*Department of Agric. Biology, Faculty of Agriculture, Eastern University, Sri Lanka*

Background: *Anubias hastifolia is a popular ornamental aquatic plant with significant* commercial potential. However, its naturally slow growth limits conventional propagation methods, creating a need for efficient in vitro multiplication. Although light quality is a critical factor influencing plant development, studies focusing on the optimization of artificial light spectra for in vitro culture of aquatic plants remain limited.

Objective: This study aimed to evaluate the effects of artificial light spectra on the in vitro growth and morphology of *A. hastifolia*, with the goal of establishing commercially viable tissue culture protocols.

Methods: Plants were grown under seven distinct light treatments using LED: red, blue, white, and red-blue combinations, and fluorescent light control. Growth parameters measured included leaf number, length, width, surface area, and fresh and dry biomass. Data were analyzed using one-way ANOVA and Tukey's test at a significance level of 5%.

Results: Leaf number showed no significant differences across treatments ($p > 0.05$). However, leaf morphology and biomass accumulation were highly significant ($p < 0.001$) by light quality. Red LED treatment produced the longest leaves (1.94 ± 0.20 cm), widest blades (0.97 ± 0.27 cm), and largest leaf surface area (1.43 ± 0.45 cm^2), suggesting enhanced cell elongation and leaf expansion. Fresh biomass was highest under red- blue (1:1) combination (0.58 ± 0.24 g), followed by Blue LED (0.56 ± 0.21 g), indicating a possible synergistic effect of combined spectra. Dry biomass was highest in both white fluorescent and blue LED treatments, both reaching 0.13 ± 0.07 g, highlighting their role in tissue density and structural development.

Conclusion: The study concludes that specific light spectra, particularly red and red-blue combinations, significantly enhance the growth and morphology of *A. hastifolia*. Further studies investigating the interaction of light intensity, photoperiod, temperature, and nutrient availability with the light quality are recommended to optimize commercial propagation protocols.

Keywords: *Anubias hastifolia,* LED light spectrum, *Aquatic plants,* Tissue culture

A/OP/06

Determination of Quality Compliance in Commercially Available Sri Lankan Bee Honey

Madhushani TRSS[1], Sirisena UGAI[2], Thilakarathna HRMGC[1], Sampath UWR[3], Abeyrathne BMTH[3], Prabashwara VT[3]

[1]Department of Animal and Food Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka
[2]Department of Plant Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka
[3]Dilmah Conservation, Dilmah Ceylon Tea Company PLC, 111 Negombo Road, Peliyagoda, Sri Lanka

Background: Bee honey is highly valued by consumers for its purity, taste & overall quality. Assessment of quality compliances and authenticity of commercial bee honey is crucial to ensure the consumer safety and rights.

Objective: This study aims to evaluate the quality compliances of selected commercially available Sri Lankan bee honey against national (SLSI) and international (CODEX & EU) standards.

Methods: Bee honey samples representing different commercially available brands (n=27) and 05 raw bee honey samples (controls) were collected from some major bee honey-producing areas (Dry, Red gum, Rubber zones) in Sri Lanka. Physicochemical parameters including pH, Electrical Conductivity (EC), Total Soluble Solids (TSS), Density, Refractive Index (RI), Water Content (WC), Colour (intensity & Pfund scale), Viscosity, Free Acidity (FA), Ash, Pollen Density and Sugar Profile were analyzed to evaluate the quality of these samples.

Results: Findings revealed that the values of the samples were in the ranges of 2.55-4.57 for pH; 59.75-772 μS cm^{-1} for EC, 71.35-80.10% for TSS, 1329.76-1428.23kg m^{-3} for Density, 1.4704-1.4933 for RI, 17.25-26.40% for WC, 0.040-0.943 for Color intensity, -23.75-311.52mm for Color pfund, 500-5100 cP for Viscosity, 10.94-103.46 meq kg^{-1} for FA, 0.0392-1.034% for Ash, 5195.5–74,262,862.50 per g for pollen density, 0-8.931% and 24.978-84.188% for sucrose and fructose content respectively.

While all samples confirmed to the standard norms provided for pH & EC, several control and many commercial samples were not confirmed to the norms such as TSS- max 75-80%, RI- Max 1.4740-1.4840, WC- max. 20-22%, FA- max. 50 meq kg^{-1}, Ash-max. 0.5-0.6%, sucrose- max. 5%, fructose and glucose-min. 60-68%, under the same standard schemes.

Conclusion: As per the Local (SLSI) and International (CODEX & EU) quality standard norms majority of the commercially available bee honey samples exhibited non-compliances with quality parameters except pH and Electrical Conductivity suggesting low quality controls & possible adulterations.

Keywords*:* Authenticity, Consumer safety, Pollen density.

A/OP/07

In Vitro Efficacy of *Trichoderma asperellum* and *Trichoderma Virens* in the Suppression of Avocado Stem-End Rot and Pineapple Black Rot

Mudugama MVSS[1], Herath HMSS[2], Bandara GASDP[3], Priyadarshani TDC[4], Egodawatta WCP[5]

[1]*Department of Plant Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka*
[2]*Department of Plant and Molecular Biology, Faculty of Science, University of Kelaniya*

Background: Postharvest diseases pose a substantial limitation for global food security, generating loss of 10-50% of the total fruit and vegetable output. Avocado (*Persea americana*) and pineapple (*Ananas comosus*) are two valuable fruit types with substantial global production and consumption. Stem end rot in avocados, induced by *Botryodiplodia theobromae*, and black rot in pineapples, caused by *Thielaviopsis paradoxa*, are widespread postharvest diseases that significantly diminish fruit quality and economic value. Due to the criticality of environmental and health hazards posed by synthetic fungicides, there is a necessity of sustainable alternatives. *Trichoderma* spp. has been shown to be effective as biocontrol agents against several pathogenic fungi.

Objective: This study assessed the in vitro antagonistic efficacy of two *Trichoderma* spp. (*T. virens* and *T. asperellum*) against the specified postharvest pathogens.

Methods: Following isolation and confirmation of each causal organism, dual culture assays were conducted on PDA plates with respective biocontrol agents (*Trichoderma virens* and *T. asperellum*), and percentage radial growth inhibition was calculated.

Results: After seven days of incubation, *T. asperellum* demonstrated greater radial fungal growth inhibition against *B. theobromae* (40.55%) compared to T. virens (34.66%). Conversely, *T. virens* displayed stronger antagonistic activity against *T. paradoxa* (56.44%) compared to *T. asperellum* (38.22%.). Further, a Statistical analysis revealed no significant difference between the two *Trichoderma* species against each pathogen ($p > 0.05$), suggesting the potential use of both *Trichoderma* species as biocontrol alternatives to substitute synthetic fungicides in management of post-harvest diseases in avocado and pineapple. Nonetheless, validation via field experiments and evaluation of commercial feasibility are crucial for practical use.

Keywords: Biocontrol, *Botryodiplodia theobromae, Thielaviopsis paradoxa*, inhibition, radial growth

A/OP/08

Effects of Dietary Supplementation with Effective Microorganisms on Milk Production and Composition in Lactating Dairy Cows

Shaill Rathnayake RMH[1], Nayananjalie AWD[1], Adikari AMJB[1], Mangalika ULP[2]

[1]*Department of Animal and Food Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka*
[2]*Department of Animal Production and Health, Getambe, Peradeniya, Sri Lanka*

Background: Effective microorganisms (EM) are beneficial microbes that improve livestock performance by enhancing digestive efficiency through various mechanisms.

Objective: To evaluate the effect of dietary supplementation of effective microorganisms on milk production and composition in lactating dairy cows.

Methods: Thirty Jersey-crossbred lactating dairy cows were randomly assigned into two treatment groups using a randomised complete block design. The groups received either total mixed ration (TMR) (control/C-TMR) or EM-supplemented TMR (EM-TMR) with EM added at 10 mL kg^{-1} of TMR. Animals were fed twice daily for 12 weeks, with water provided *ad libitum*. Milk production data and samples were collected starting from the eighth week. Weekly milk composition was analyzed using the Ultrasonic Lactoscan® milk analyser. Statistical analysis was performed using a mixed-effect model in SAS software.

Results: Although dietary EM supplementation did not result in a statistically significant increase in milk yield ($P > 0.05$), cows fed EM-TMR produced numerically higher daily milk yield (8.28 ± 0.81 L) compared to the control group (7.24 ± 0.81 L). While the difference appears modest, the resulting increase of approximately 1 litre per cow per day can have a meaningful economic impact when scaled to total herd production. EM-TMR treated group showed significantly higher ($P < 0.05$) milk fat (4.36 ± 1.11%) and milk protein (3.27 ± 0.02%) compared to the control group. Lactose and solid non-fat percentages were not significantly different ($P > 0.05$) between groups. A significantly higher ($P < 0.05$) milk price per litre (163.21 ± 1.22 LKR) was recorded in the EM-TMR fed group compared to the control (159.56 ± 1.22 LKR). This price difference of 3.65 LKR L^{-1} reflects improvements in milk composition, particularly in quality-determining components such as fat and solids.

Conclusion: While EM supplementation does not increase milk yield, it improves milk composition, particularly milk fat and protein. Improved milk composition results in a higher milk price per litre, demonstrating economic benefit.

Keywords: Animal Nutrition, Dietary Manipulation, Probiotics, Rumen Modification.

A/OP/09

Biofunctional Properties and Health Benefits of Soy-based Probiotic Yoghurt: A Review

Ranaweera LM[1], Wijesekara VA[1] and Adikari AMJB[1]

[1]*Department of Animal and Food Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka*

Background: Yoghurt is a nutritious, fermented dairy product that supports nutrient absorption, bone health, and immune function. Adding probiotics further enhances its health benefits. Soy-based products are gaining attention as an alternative, sustainable protein, but they face challenges like unpleasant taste and flatulence. However, soy-based probiotic yoghurt can overcome these issues, offering significant health benefits. This review provides a comprehensive overview to guide the food industry, improving yoghurt production through diverse approaches.

Objective: This study aims to synthesise existing knowledge on soy hesitancy and its mitigation strategies, alongside the physicochemical and sensory properties, bio-functional properties, and health benefits of probiotic soy-yoghurt.

Methods: The current knowledge on soy-based probiotic yoghurt was consolidated through a literature review using articles published in PubMed, Scopus, and Google Scholar.

Results: Glycinin and β-conglycinin in soy proteins interact with milk proteins through pH- and heat-dependent forces, including charge repulsion, hydrogen bonding, hydrophobic contacts, disulfide bonds, and calcium bridging, altering solubility, stability, and viscosity. Soy–whey blends improve solubility and emulsification by forming flexible aggregates upon heating, while soy–casein requires calcium or heat for stability. These interactions result in strong elastic gels, enhanced water-holding capacity, and improved emulsifying ability, though excessive soy may cause chalkiness. The beany flavor of soy-based products is caused by oxidative rancidity, while isoflavones contribute to bitterness, which can be mitigated through blanching. Oligosaccharide-induced flatulence can be reduced through proper fermentation with starter cultures and probiotics. Additionally, protein-rich soy-based yogurt offers antihypertensive, hypocholesterolemia, antioxidant, anti-obesity, anticancer, and antidiabetic properties, supporting bone, skin, and kidney health.

Conclusion: Though soy-based yoghurt products possess incredible properties, it is imperative to bring awareness of soy-based probiotic yoghurt to the stakeholders for a wider production and usage, mitigating the prevailing cons. Innovating value-added soy-based yoghurt incorporating fruit, prebiotics, coffee, or honey will enhance the acceptability and quality of the product.

Keywords: Flatulence, Functional Properties, Physicochemical Properties

A/OP/10

Effects of Feeding Regimens on Growth and Survival of Common Carp (*Cyprinus carpio*) from Post-Larval to Fingerling Stages

Varathanathan K[1], Ganeshwaranathan A[2], Piratheepan S[1], Loganathan T[3]

[1]Department of Animal Science, Faculty of Agriculture, University of Jaffna
[2]Aquaculture Development Center
[3]Department of Radiography/Radiotherapy, Faculty of Allied Health Sciences, University of Peradeniya

Background: Common carp (*Cyprinus carpio*) is widely cultured due to its adaptability and economic value, and optimizing feeding regimens during the early post-larval to fingerling stages is essential for improving growth, survival, and feed efficiency. Feeding rates in carp aquaculture typically range between 3–5% of body weight per day, as recommended by FAO and ICAR guidelines, with practices varying regionally—for example, 3–5% in Nepal and up to 5% in Singapore (FAO, 2014; ICAR, 2010). Studies on carp and related species, such as *Catla catla*, indicate that growth and feed conversion are optimized within this range (Das et al., 2012). Therefore, the present study compares 3% and 5% body weight feeding ratios, representing the lower and upper limits of common practice, to evaluate their effects on growth performance and survival of common carp fingerlings.

Objective: This study aims to determine the optimal feeding regimen for Common Carp from post-larvae to fingerling stages by evaluating the effects of 3% and 5% body weight feeding ratios on growth performance and survival rates.

Methods: A comparative experimental design was conducted at a controlled aquaculture facility. Post-larvae (n=500,000, mean length 1.2 cm, weight 0.01 g) were divided equally into two 690m^3 concrete tanks (250000 PL/ tank) with mud bottoms. Tank R8 received feed at 3% body weight of carp, and R9 at 5%, thrice daily up to 60 days. Growth (length, weight) and survival were measured weekly. Water quality (temperature, pH, dissolved oxygen) was monitored. Data were analyzed using one-way ANOVA and regression, with significance at $P<0.05$.

Results: At 60 days, fry fed at 5% body weight per day (R9) reached a mean length of 2.5 ± 0.2 cm and weight of 0.37 ± 0.04 g, compared to 1.9 ± 0.1 cm and 0.18 ± 0.02 g in those fed at 3% (R8), corresponding to length and weight increases of 28.5% and 111.1%, respectively ($P = 0.001$). The mean weight gain was 0.19 g in R9 versus 0.09 g in R8. Survival was 76.0% (190,000/250,000) in R9 and 80.0% (200,000/250,000) in R8 ($P = 0.042$). Cumulative feed input over the trial was approximately 450 kg in R9 and 270 kg in R8, reflecting the different ration levels. Although fry in R9 showed significantly higher early growth, these advantages diminished at the fingerling stage, where differences were reduced to 5.9% in length and 11.5% in weight ($P = 0.031$).

Conclusion: A 5% feeding regimen enhances early growth but becomes less efficient at the fingerling stage, as additional feed does not translate into proportional growth gains, while 3% supports higher survival. Stage-specific feeding adjustments are therefore recommended to optimize growth and sustainability in carp aquaculture.

Keywords: Aquaculture, Common Carp, Feeding Regimens, Growth Performance, Survival Rates

A/OP/11

Spatial Variation of Irrigation Water Quality Parameters Along the New *Jaya Ganga* Trance-Basin Canal from *Kala Wewa* to *Thisa Wewa*

Ranathunga RASS[1], Amarasekara MGTS[1], Nirmanee KGS[1]

[1]*Department of Agricultural Engineering and Soil Science, Faculty of Agriculture, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka*

Background: New *Jaya Ganga* trance-basin canal is one of the major irrigation and drinking water supply canals in north central province of Sri Lanka.

Objective: A study was conducted to assess spatial variability of water quality parameters along the canal from *Kala wewa* to *Thisa wewa* in ten sampling points to represent different land uses.

Methods: Water sampling was done in two-week intervals for three-month period from June to September in 2023. Water quality parameters such as pH, EC, TDS, NO_3^- N, P, K, SAR, turbidity and hazardous elements (Cd and As) concentrations were measured. Statistical analysis was performed using ANOVA to assess significant difference of specified water quality parameters among sampling points.

Results: According to the results pH of the water samples were found to vary from 7.3 to 7.8 indicating slightly alkaline in nature. Observed EC values varied from 0.16 to 0.27 dSm^{-1}, and total dissolved solids fluctuated between 78 to 136 mgL^{-1} suggesting a low risk of salinity development in irrigated lands. The SAR at all sampling points was less than 10, indicating low sodium content, while the turbidity was below 100 NTU, reflecting low sediment content in the canal water. Nitrate N content ranged between 2.0 and 5.4 mgL^{-1} and dissolved P content was within the range of 0.02 – 4.7 mgL^{-1} across the sampling points. Significantly higher ($p<0.05$) concentrations of nitrate and phosphate contents were reported at sampling points 2 and 3 where main land use was paddy farming. Concentrations of Cd (0.003- 0.007 mgL^{-1}) and As (0.01-0.04 mgL^{-1}) were detected in all sampling points with significantly higher ($p<0.05$) concentrations observed at sampling points 4 and 5, which were located near the phosphate deposit at *Eppawala*.

Conclusion: Even though all tested parameters were within the FAO irrigation water limits, close monitoring is necessary to assess long-term impacts on irrigable lands.

Keywords: Heavy metals, Nitrate leaching, Salinity development

A/OP/12

Formulation of *Veralu* (*Elaeocarpus serratus*) Fruit Sauce Incorporated Soft Vanilla Ice Cream and Evaluation of Quality Parameters

Edirisinghe EAIT[1], Piyasena MP[2], Adikari AMJB[2], Arsecularatne DAM[3]

[1]*Department of Agricultural Systems, Faculty of Agriculture, Rajarata University of Sri Lanka*
[2]*Department of Animal and Food Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka*
[3]*Ceylon Cold Stores PLC, Ranala, Kaduwela, Sri Lanka*

Background: *Veralu* (*Elaeocarpus serratus*) is a nutritious, seasonal fruit indigenous to Sri Lanka. Yet it remains underutilized due to high perishability and lower market demand, leading to a significant postharvest loss. Ice cream, a widely consumed dairy-based frozen dessert, presents opportunities for value addition through fruit incorporation.

Objective: This study aims to incorporate *veralu* fruit sauce in soft vanilla ice cream and evaluate its quality parameters.

Methods: *Veralu* fruits harvested at commercial maturity were pulped to prepare three fruit sauce formulations with different ratios of fruit pulp and sugar on total weight basis: T_1 (25% pulp, 40% sugar), T_2 (30% pulp, 35% sugar), T_3 (35% pulp, 35% sugar). Ingredients in each treatment were blended to obtain a sauce and pasteurized at 75°C for 15–20 seconds. Prepared sauce samples were rippled into three soft vanilla ice cream samples at 20% (v/v), hardened immediately, and stored at −18°C. Ice cream samples were evaluated for physical, chemical, and microbial properties. The most preferred ice cream sample was selected through a sensory evaluation, with an adequate number of untrained panelists, using a 5-point hedonic scale. Sensory data were analyzed by the Friedman test at 5% significance level using MINITAB.

Results: All ice cream samples exhibited a freezing point depression factor of around 20, indicating favorable scoopability. Sensory evaluation identified the ice cream containing *veralu* fruit sauce from T_2 (30% pulp, 35% sugar) as the most preferred sample. It exhibited 38.33% total solids, 8.85% fat, and 11.42% milk solid-not-fat, maintaining all the chemical parameters within the SLSI specifications. The selected ice cream and its fruit sauce remained microbiologically stable for Aerobic Plate Count and Total Coliform count up to 1.5 months under frozen conditions at −18°C.

Conclusion: Findings confirm that *veralu* fruit sauce can be successfully incorporated into soft vanilla ice cream, while adding value to underutilized *veralu* fruits.

Keywords: Frozen dessert, Underutilized, *Veralu* fruit

A/OP/13

Biocontrol of Crown Rot in Cowpea Using Solid-Formulated *Trichoderma virens* During the Yala Season in the Dry Zone of Sri Lanka

Nawarathna GHMGSW[1], Priyadarshani TDC[1], Egodawatte WCP[1]

[1]*Department of Plant Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka*

Objective: The study evaluated the efficacy of solid-based formulation of locally-isolated *Trichoderma virens* strain against *Agroathelia rolfsii*, the causal agent of crown rot in cowpea (*Vigna unguiculata*) under semi *in-vivo* and field conditions during the Yala season in the Dry zone of Sri Lanka.

Methods: The research utilized long-term preserved molecularly confirmed *T. virens* (Accession number: MG386643.1) to prepare its cultures for the study and *Agroathelia rolfsii* was isolated, molecularly confirmed and accession number was derived as, PV216709 during the study. A solid-based formulation of *T. virens* was prepared following a standard protocol and tested under semi *in-vivo* and field conditions. The semi *in-vivo* experiment was conducted under shade house conditions according to CRD design while *in-vivo* experiment was conducted according to four factor split plot design. Weekly CFU/mL of *T. virens* was monitored following serial dilution plate technique, and disease incidence was recorded daily following inoculation using the agar disc method.

Results: *T. virens* remained viable in treated soils throughout the cultivation period, with a decline over time in both conditions which has proven by its CFU/mL in each condition and the disease incidence was observed as zero. Due to the observed decline in colony forming units over time, solid formulation was applied twice at three-week intervals under semi *in-vivo* (T -28˚C ± 2˚C, 70% RH, and under 50% shade) conditions and three times during the growing season under field conditions (Average T -28.2°C, RF- 5.5 mm/day) at an initial spore concentration of 7×10^8 spore/mL at seeding, followed by applications at 3×10^6 spore/mL at three-week intervals against cowpea crown rot disease in dry zone, Sri Lanka.

Conclusion: The effective suppression of *A. rolfsii* by the solid-based *T. virens* formulation highlights its potential as a reliable component in season-specific, sustainable disease management strategies for cowpea cultivation in Sri Lanka's Dry Zone.

Keywords: Crown rot, Sustainable disease management, *Trichoderma virens*

A/OP/14

Allelopathic Influence of *Monochoria vaginalis* (Burm.f.) C.Presl Extracts on Seed Germination and Emergence of Mustard (*Brassica* spp.)

Vibhavi GWKR[1], Devasinghe DAUD[1], Egodawatta WCP[1], Mihirangi DDK[1], Weerathunga TK[1]

[1]Department of Plant Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka

Background: Allelopathy refers to the release of allelochemicals by plants that influence germination and growth of neighboring species, affecting crop–weed interactions and agroecosystem dynamics.

Objective: This study evaluated the allelopathic potential of aqueous extracts from aerial parts of *M. vaginalis*, a dominant aquatic weed in Sri Lankan rice ecosystems, on germination and emergence of mustard.

Methods: Aqueous extracts were prepared by soaking 50 g powdered aerial parts of *M. vaginalis* in 1 L distilled water for 24 h, followed by filtration (Whatman No. 1). Five concentrations (0% control, 25%, 50%, 75%, 100%) were applied (5 mL per Petri dish) with 20 mustard seeds in a completely randomized design (CRD) with three replicates. Seeds were incubated at 25 °C and 80% RH for three days. Germination percentage, germination rate index (GRI), mean germination time (MGT), and radicle and plumule length were recorded. Data were analyzed using the general linear model (GLM) and means compared with LSD at $p < 0.05$.

Results: Germination percentage was not significantly affected by concentration. However, significant differences occurred in GRI, radicle, and plumule lengths. The 25% extract yielded the highest GRI (91.39 ± 1.27), radicle length (7.83 ± 0.30 cm), and plumule length (5.77 ± 0.17 cm), all greater than the control. In contrast, 100% extract inhibited vigor, showing the lowest GRI (77.50 ± 1.67), radicle length (0.70 ± 0.29 cm), and plumule length (1.80 ± 0.18 cm). Although MGT was longest in the 100% extract (1.21 ± 0.17 days), the difference was not significant. Extract pH declined slightly with concentration (6.5–6.7 vs. 6.8 control) but remained within the favorable range for mustard germination.

Conclusion: The findings demonstrate the concentration-dependent allelopathic effects of *M. vaginalis*, suggesting potential use as natural herbicides at higher concentrations or bio-stimulants at lower concentrations in sustainable crop management.

Keywords: Allelopathy, *Brassica* spp., *Monochoria vaginalis*

A/OP/15

A Systems Thinking Approach for Sustainable Vertical Tea Farming in Sri Lanka: Insights from Causal Loop Diagrams and Dynamic Modeling

Samarakoon SMABK[1,4], Ariyawansha T[2], Rupasinghe CP[3]

[1]*Faculty of Graduate Studies, University of Ruhuna*
[2]*Department of Agriculture Technology, Faculty of Technology, University of Colombo*
[3]*Department of Agricultural Engineering and Environmental Technology, Faculty of Agriculture, University of Ruhuna*
[4]*Department of Agricultural Engineering and Soil Science, Faculty of Agriculture, Rajarata University of Sri Lanka*

Background: Tea (*Camellia sinensis*) cultivation is constrained by challenges associated with traditional cultivation methods, limited land and labour availability, inefficient utilization of resources, and vulnerability to climate change. Vertical farming that stacked layers within controlled environments to grow crops is a sustainable alternative to maximize the efficient use of resources, while facilitating, year-round production. This approach for tea requires robust systems-thinking frameworks to address complex interdependencies between biological, environmental, economic and operational (technology and social) factors.

Objective: This study integrates Causal Loop Diagrams (CLDs) and System Dynamics (SD) modelling based on secondary data to explore feedback mechanisms in vertical tea farming and identify leverage points for improving yield and reducing labour dependency through a systems-thinking approach.

Methods: The system dynamics model was developed using AnyLogic software, with input data sourced from published literature. The system dynamics model was simulated over a one-year time by using input data obtained from published literature to capture temporal trends in vertical tea farming systems. Model validation was performed by comparing simulation results with historical yield data.

Results: The CLD revealed that vertical tea farming systems, with integrated technology adoption and renewable energy, create reinforcing feedback loops that enhance yield, product quality, and export income while reducing waste and operational costs. Traditional cultivation showed up to 30% yield loss with labor costs near 60%, while vertical systems improved yield by 20–25% and cut water use by 70–90%, though energy needs exceeded 40% of costs. CLDs showed that vertical tea farming with technology and renewable energy integration creates reinforcing feedback loops that enhance yield, quality, and export income while reducing costs.

Conclusion: Using a systems-thinking framework with CLDs and SD modelling, this study highlights how vertical systems can improve agronomic precision and resilience, positioning them as sustainable, scalable alternatives aligned with circular economy principles.

Keywords: Sri Lanka, System Thinking Approach, Vertical Tea Cultivation

A/OP/16

Smart Micro-Irrigation Systems for Sustainable Agriculture: A Comprehensive Review of Technologies, Applications, and Challenges

Saheedha N[1]

[1]*Department of Agricultural Engineering & Soil Science, Faculty of Agriculture, Rajarata University of Sri Lanka, Puliyankulama, Anuradhapura*

Background: Smart micro-irrigation systems are becoming essential for improving water productivity and sustainability in agriculture amid rising water scarcity, climate variability, and the growing demand for precision resource management. These systems, such as drip and sprinkler irrigation, combined with technologies like IoT, soil moisture sensors, and automated controllers, allow accurate, timely water delivery directly to crop root zones.

Objective: The main objective of this review is to evaluate the technological evolution, practical applications, and challenges of smart micro-irrigation systems within sustainable agricultural practices.

Methods: A systematic literature review was conducted following the PRISMA framework. An initial pool of nearly 500 research articles was identified across databases including Web of Science, ScienceDirect, Springer, Wiley Online Library, Scopus, Google Scholar, and IEEE Xplore. After applying inclusion and exclusion criteria based on relevance, publication quality, and focus on smart micro-irrigation in sustainable agriculture, 50 peer-reviewed English-language articles published between 2012 and 2024 were retained for detailed analysis. Literature searches employed Boolean operators (AND, OR) with keywords such as “Smart irrigation systems,” “Micro irrigation systems,” “Sustainable agriculture,” and “Precision farming.”

Results: The synthesis of findings indicates that smart micro-irrigation systems consistently improve water use efficiency, optimize crop yields, and reduce labor and input costs, with reported water savings ranging from 40% to 70% across different contexts. Their integration with solar energy and mobile-based platforms enhances usability, particularly for smallholder farmers. However, widespread adoption is constrained by high initial costs, limited technical skills, and insufficient policy support.

Conclusion: The review concludes that smart micro-irrigation holds great potential to contribute to climate-resilient, resource-efficient, and sustainable agriculture. Addressing adoption barriers through supportive policies, financial incentives, and farmer education is essential to scale its impact globally.

Keywords: Precision farming; Smart micro-irrigation; Solar energy integration; Sustainable agriculture; Water use efficiency

A/OP/17

Evaluating the Relationship between Interferon-Gamma Levels and Anaplasmosis Infection in Sheep using ELISA

Attanayake KMMS[1], Anupama NMT [2], Adikari AMJB[1]

[1]*Department of Animal and Food Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka*

[2]*Department of Veterinary Pathobiology, Faculty of Veterinary Medicine & Animal Science, University of Peradeniya, Peradeniya, Sri Lanka*

Background: Anaplasmosis, a tick-borne disease affecting livestock, leads to a significant threat in animal health and farm productivity. Interferon-gamma (IFN-γ), a cytokine involved in immune regulation, has been proposed as a potential biomarker for infection due to its role in activating macrophages against intracellular pathogens like *Anaplasma* spp. Understanding the association between IFN-γ levels and anaplasmosis could support early diagnostics and disease monitoring.

Objective: This study aims to assess the relationship between interferon-gamma levels and infection status of anaplasmosis in sheep.

Methods: The study was conducted using 30 blood samples collected from the sheep population at the OyaMaduwa NLDB farm in Anuradhapura, with diagnoses of *Anaplasma ovis* and *Anaplasma marginale* infection. Serum separated from the blood samples was analyzed using ELISA to calculate Sample-to-positive (S/P) ratios and the mean S/P values using a given formula. Statistical analyses were conducted using R Studio 4.3.2, including one-way ANOVA, correlation analysis, and logistic regression. Interferon-gamma concentration was treated as the dependent variable and *Anaplasma* infection status (positive/negative) as the independent variable. Statistical significance was declared as < 0.05.

Results: ANOVA test showed no significant difference in mean IFN-γ levels between infected and non-infected animals ($p = 0.383$). Correlation analysis revealed a weak, non-significant negative association ($r = –0.165$, $p = 0.3829$). Logistic regression also demonstrated no significant predictive relationship between IFN-γ levels and infection status ($p > 0.05$), although a slight negative pattern was observed.

Conclusion: The findings from this retrospective exploration confirmed that there is no significant association between IFN-γ levels and *Anaplasma* infection status in the studied sheep population. While IFN-γ is a critical cytokine in immune response, it may not serve as a reliable biomarker for anaplasmosis in this context. Therefore, future studies with larger sample sizes are recommended to validate these findings and potentially uncover a more definitive relationship.

Keywords: Tick-borne disease, ELISA, Interferon-Gamma

A/OP/18

Impact of Natural Stabilizers on Physicochemical, Microbiological, and Sensory Properties of Frozen Yoghurt

Moragoda MKCS[1], Wijesekara VA[1] and Weerasingha WVVR[1]

[1]*Department of Animal and Food Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka*

Background: Frozen yoghurt is produced by bacterial milk fermentation followed by air incorporation to improve the texture. Stabilizers help in the maintenance of the texture over time. Natural stabilizers are preferred over synthetics due to health concerns.

Objective: To assess natural stabilizers' effects on frozen yoghurt's physicochemical, sensory, and microbiological properties.

Methods: Frozen yoghurt samples were prepared with chia seeds (*Salvia hispanica* L., 3%), carrot pulp (*Daucus carota* L., 4%), potato starch (*Solanum tuberosum*, 1%), and beet pulp (*Beta vulgaris* L., 1%) and compared to a control containing 0.7% gelatin. Samples were evaluated over 14 days for quality. Physicochemical differences were analyzed using one-way ANOVA at 95% confidence in R Studio, while sensory properties from the same 30 panelists were analyzed using the Friedman test in SPSS (p <0.05).

Results: Frozen yoghurt with beetroot imparted the highest protein (4.00 ± 0.02%), whereas chia seeds significantly increased fat (5.21±0.11%). Moisture varied distinctly among treatments, with the lowest (77.04%) by potato enrichment. Total solids were 16–20% in all treatments except beet and carrot. Beet incorporation caused the lowest viscosity over time, while potato starch showed a higher pH (5.51±0.03) throughout the storage. Colour declined in all treatments over time, where beet incorporation showed a notable reduction in L^* values, while the potato starch recorded the lowest a^* and b^* values at the end of the storage. Potato also had the highest total phenolic content (76.46 ± 4.23 mg GAE/100 g). Yeast and mould counts remained within acceptable limits in all treatments. Sensory results showed beet as the most preferred for colour, and chia seeds for aroma. Overall sensory acceptability ranked potato highest, followed by beet, control, carrot, and chia.

Conclusion: All stabilizers were effective, with potato starch-frozen yoghurt showing superior sensory scores, highest phenolics and solids, stable pH, and best overall acceptability during storage.

Keywords: Fermented Dairy Products, Quality Parameters, Total Phenolic Content

Applied Sciences

Oral Presentations

AS/OP/01

Response and Acceptability of Mothers to a Health Promotion Intervention Targeting to Reduce Risks of Unintentional Home Injuries by Improving Home Environment

Rajapakshe RMWN[1], Warnasekara YPJN[2], Senarathna L[1]

[1]*Department of Health Promotion, Faculty of Applied Sciences, Rajarata University of Sri Lanka, Mihintale, Sri Lanka*
[2]*Department of Community Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka, Saliyapura, Sri Lanka*

Background: Unintentional home injury is one of the most preventable and critical public health issue among children around the world, and the situation in Sri Lankan villages has no exemption. While many interventions focus on knowledge improvement, this intervention utilizes a collective, participatory, community-based health promotion approach, which has been shown to be effective.

Objective: To explore the response and acceptability of mothers to a health promotion intervention targeting to reduce risks of unintentional home injuries by improving the home environment.

Methods: A qualitative study was conducted following the health promotion intervention. Focus group discussions (FGDs) were used as the main data collection method. Mothers were purposively selected for FGDs. FGDs were conducted with mothers to explore their responses and acceptability of the intervention. Seven groups, with 4-8 mothers, participated in FGDs, and topic guides were used to collect data. Data were recorded, transcribed, and then subjected to thematic analysis.

Results: Three main themes emerged from the data analysis. The first theme was "change of knowledge." Mothers reported that participating in the intervention empowered them to gain knowledge, and provided additional opportunities for peer learning through small group work. The second theme, "need to take action," highlighted that mothers felt sufficiently empowered to think about and plan actions to improve the home environment. The final theme, "stepping to healthy practices," reflected mothers' reports of shifts in their practices as a result of the intervention, which contributed to improving the home environment and reducing injury rates.

Conclusion: This study concludes that mothers accepted health promotion intervention, and they were empowered during the intervention to reflect on their knowledge and practices. This led them to take corrective actions to improve the injury-free home environment.

Keywords: Health promotion intervention, qualitative study, unintentional home injuries

AS/OP/02

Efficient Resource Use in Practical Course Scheduling via the Enhanced Welsh–Powell Method

Ruwan SMT[1], Ekanayaka EMUSB[1]

[1]*Department of Physical Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka*

University timetabling poses unique challenges for practical course scheduling due to the high cost of consumable specimens and limited laboratory resources. Unlike lecture scheduling, which mainly seeks to minimize the number of time slots, practical course scheduling must also account for group execution and resource preservation. In particular, completing all practical groups of a course within consecutive time slots is more critical than simply reducing the total number of slots, as it helps minimize specimen waste and repeated preparation efforts. Additionally, universities typically accommodate only two practical sessions per day, further constraining feasible timetabling solutions. To address these challenges, this research proposes an enhanced graph coloring method based on the traditional Welsh-Powell algorithm. Results: While the original Welsh-Powell ranks courses solely by vertex degree (i.e., number of conflicts), our method introduces a more comprehensive metric called the Color Intensity Score (CIS). This score considers multiple factors beyond degree, including: the number of groups per practical course, the group index of each session, an added course factor indicating recent timetable insertions, and the traditional conflict degree. Courses are ordered by CIS, and groups are combined and scheduled iteratively to maximize efficiency. After scheduling each batch of course groups, CIS values are dynamically updated to reflect the changing constraints. By prioritizing the completion of grouped practical courses in close succession, the proposed method reduces redundancy in lab setup and conserves specimens. This method outperforms traditional coloring techniques, achieving both resource-efficient group scheduling and practical adherence to daily session limits, according to experiments conducted with real university data. The method offers a promising solution for institutions facing high demand for practical courses under limited laboratory infrastructure.

Keywords: Color Intensity Score, Graph Coloring, Practical Groups, Time Table Scheduling

AS/OP/03

A Cycle-Based Symmetric Encryption using Radio Arithmetic Mean Labeling and Extended Hill Cipher

Weerasinghe GHSN[1], Perera AAI[2]

[1*]*Department of Physical Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka, Mihintale*
[2]*Department of Mathematics, Faculty of Science, University of Peradeniya, Peradeniya*

Graph labeling encodes numerical relationships within network structures. Applying distance constraints to these labelings offers a clear and organized way to create secure cryptographic algorithms. This study presents a symmetric encryption technique combining Radio Arithmetic Mean Labeling (RAML) on even cycle graphs with a structurally adaptive Hill cipher. RAML ensures that vertex labels satisfy the arithmetic mean condition; $\lceil (f(u) + f(v))/2 \rceil \geq diam(G) + 1 - d(u,v)$ where $f$is the labeling, $u$and $v$are vertices of the graph G, $(u,)$ denotes the distance between $u$and v, and $diam(G)$ represents the diameter of G. The highest value given during this process is called the Radio Mean Number (RMN). The encryption key is constructed from the labeling sequence of a chosen cycle graph, and the key matrix dimension is derived from the order and symmetry of the graph structure. The system incorporates an extended 36-symbol alphanumeric space, comprising uppercase English letters and digits, enabling broader data representation beyond conventional ciphers. Repeated characters in the plaintext are replaced by a substitution marker to avoid confusion during encryption. Message blocks are padded with placeholder values to match the required matrix dimensions. Numeric equivalents of these characters are arranged in blocks and processed using modular matrix multiplication. To enhance security, a RMN determined from the labeling process is optionally added to the transformed data to introduce a dynamic offset that is graph-dependent and resistant to simple cryptanalysis. Compared to classical methods such as the standard Hill cipher, this approach is more effective because RAML-guided labeling enables structured key generation, reducing key management complexity while maintaining strong encryption. Decryption is performed by reversing the process using the same RAML-based matrix and modular arithmetic. Future work includes expanding the method to handle irregular graphs and looking into multi-layered cryptographic applications, like secure communication and dynamic key management.

Keywords: Cryptography, Hill Cipher, Radio Arithmetic Mean Labeling

AS/OP/04

Effectiveness of a Health Promotion Intervention to Reduce Cyberbullying Among Students at the Technical College, Anuradhapura

Thirulogasanker T[1], Pushpakumara PHGJ[2], Senarathna L[1]

[1]*Department of Health Promotion, Faculty of Applied Sciences, Rajarata University of Sri Lanka*
[2]*Department of Family Medicine, Faculty of Medicine & Allied Sciences,Rajarata University of Sri Lanka, Saliyapura*

Background: Cyberbullying is an escalating public health issue, threatening the psychological and social wellbeing of youths. Students in technical institutes in Sri Lanka are particularly vulnerable due to characteristics such as age, early school exit. Despite existing efforts, addressing this issue requires a holistic and sustainable intervention like health promotion.

Objective: This study aimed to assess the effectiveness of a health promotion intervention in reducing cyberbullying among students at College of Technology (CoT) by addressing its underlying determinants.

Methods: A quasi-experimental pre-post study was conducted among 50 students at the CoT, Anuradhapura. A four-month health promotion intervention, guided by a conceptual framework, was developed. Students were facilitated to identify and clarify determinants through group discussions, observations, and student-led activities. Prioritized determinants were addressed through targeted activities; ice-breakers (inadequate peer response, glorification), compliment box (poor peer relationships), miming activity and reflective wall (knowledge gaps on impacts), and traffic-calendar (problematic social-media use). The slogan "Spot it, Stop it" was developed concurrently, monitors were appointed for follow-up and an anti-cyberbullying club was initiated to ensure sustainability. Pre- and post-intervention data were collected via self-administered questionnaires and analyzed using descriptive and inferential statistics.

Results: The proportion of students reporting at least once experiencing cyber-victimization three months before the intervention reduced significantly after the intervention; Impersonation (80.8% to 42.3%, $p < 0.001$, CI: 25.1–51.9) insulting messages/calls (71.2% to 40.4%, $p = 0.002$, CI: 12.1–48.4), and unauthorized photo sharing (69.2% to 26.9%, $p < 0.001$, CI: 24.2–60.4). Similarly, students reporting involvement in cyber-perpetration also reduced; insulting messages (71.2% to 21.2%, $p < 0.001$, CI: 31.8–68.2), verbal cyberbullying (51.9% to 5.8%, $p < 0.001$, CI: 30.4–61.8).

Conclusion: A health promotion intervention can significantly reduce cyberbullying by empowering students to recognize and respond to such behaviours, whether as perpetrators, victims, or observers.

Keywords: Cyberbullying, Health promotion, Technical College

AS/OP/05

Interpretable Breast Cancer Detection Using Shannon Entropy-Based Attribute Selection

Subawickrama HDAW[1], Udagedara UGIGK[2], Nishantha SAA[3], Abeysundara SP[4]

[1]*Department of Physical Sciences, Faculty of Applied Sciences. Rajarata University of Sri Lanka*
[2] *Lewis University, IL, United States*
[3] *Clarkson University, NY, United States*
[4]*Department of Statistics & Computer Science, Faculty of Science, University of Peradeniya*

Background: Breast cancer is a leading cause of death among women worldwide, with over 2.3 million new cases and 600,000 deaths reported annually. In Sri Lanka, nearly 3,000 new cases each year highlight the need for accurate and interpretable diagnostic methods.

Objective: This study aims to improve breast cancer detection by proposing a Shannon entropy-based attribute selection technique. Shannon entropy, a fundamental concept from information theory, quantifies the amount of uncertainty or information in a dataset. Since the Wisconsin Diagnostic Breast Cancer (WDBC) dataset (569 instances) consists of continuous features, attributes were discretized using an equal-width binning rule with 5 bins before calculating entropy and information gain. Information gain values were then used to rank the features, and the optimal subset was determined by selecting 13 attributes at the intersection point of the bar plot of information gain and the cumulative gain curve, ensuring a balanced trade-off between dimensionality and relevance. Using these selected features, three classification models Support Vector Machine (SVM), Logistic Regression, and Random Forest were evaluated.

Results: SVM achieved the highest accuracy (94.14%), followed by Logistic Regression (92.5%) and Random Forest (90.83%). SVM correctly identified 87 out of 90 benign and 26 out of 30 malignant cases. SVM outperformed the others due to its ability to exploit the clearer decision boundaries created by entropy-based selection. It also benefits from kernel functions that capture non-linear patterns, unlike Logistic Regression's linear assumptions. Random Forest may suffer from reduced tree diversity when fewer features are available, limiting its performance.

Conclusion: Overall, the proposed entropy-guided SVM model demonstrates a powerful, high-performing, and interpretable solution for enhancing diagnostic precision in real-world breast cancer detection tasks.

Keywords: Attribute selection, Breast cancer detection, Shannon entropy

AS/OP/06

Analysis and Characterization of Sludge from Water Treatment Plants: Implications for Environmental Management

Dissanayaka DMRMP[1], Wickramasinghe S[2], Madunil SL[3]

[1]*Department of Biological Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka*
[2]*Department of Biological Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka*
[3]*Department of Indigenous Medical Resources, Faculty of Indigenous Health Sciences and Technology, Gampaha Wickramarachchi University of Indigenous Medicine*

Background: Water treatment plants (WTPs) generate significant quantities of sludge, which, if improperly managed, pose environmental and public health risks. In Sri Lanka's North Central Province, data on the physicochemical properties of sludge and its reuse potential are limited, highlighting the need for location-specific studies to inform sustainable waste management strategies.

Objective: This study aimed to analyze and characterize the physical and chemical properties of sludge from Mahakanadarawa, Nuwarawewa, and Thuruwila WTPs and to evaluate its potential for agricultural reuse and brick manufacturing.

Methods: At each plant, eight subsamples with a weight of 500g in each sample (four corners, top and bottom) were homogenously composited into representative top and bottom sludge samples. Chemical parameters (pH measured with a calibrated pH meter, Electrical Conductivity and total dissolved solid measured with a portable EC/TDS meter, nitrate determined by UV-Vis spectrophotometry, and major nutrients, inorganic ions, and heavy metals quantified by X-ray fluorescence spectroscopy) and physical parameters (ash content determined by gravimetric analysis) were analyzed using standard laboratory procedures. Results are reported as the mean of two replicate tests. Results were compared with the World Health Organization (WHO) limits for land application.

Results: The pH values (7.54–8.23) and EC (136–298 µS/cm) were within WHO limits. Phosphorus (18,700-24,700 mg/kg) and potassium (11,700-42,600 mg/kg) indicated strong fertilizing potential, while calcium (69,100-91,500 mg/kg) supported soil structure enhancement. However, sulfur levels (30,400-42,300 mg/kg) exceeded recommended limits, and magnesium was critically deficient. Nitrate levels varied, with some top samples exceeding WHO limits, indicating eutrophication risks. Heavy metals, especially nickel (315-656 mg/kg) and arsenic (83-196 mg/kg), exceeded WHO limits, while other heavy metals like Pb, Cr were within the recommended range and Cd was not detected. The study concluded that untreated sludge is unsuitable for direct agricultural application. However, Layer based segregation allows for reuse with proper modification with the top layer for agricultural use with nutrient adjustments, proper settling heavy metals may leach to the bottom layer and the bottom layer for brick production as high-temperature firing converts metals into stable compounds.

Conclusion: These finding highlight reuse potential, leachability, and the importance of layer-based segregation to enhance environmental safety and resource recovery.

Keywords: Environmental Safety, Sludge Regeneration, Heavy Metals

AS/OP/07

3D Geophysical Characterization of the 85°E Ridge Using Gravity Data and Seismic Profiles

Bandara KMSP[1], Samaranayake SA[1], Wijewardane HO[1]

[1]*Department of Physical Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka*

The 85°E Ridge is a prominent aseismic linear structure in the Bay of Bengal, extending from the Mahanadi Basin off India's northeast coast to the Afanasy Nikitin seamount. Despite numerous origin models ranging from hotspot volcanic chains and abandoned spreading centers to leaky transform faults and intra-plate deformation zones induced by the India–Eurasia collision the ridge's, formative mechanism remains unresolved. A critical limitation of previous studies is that their exclusive reliance on two-dimensional interpretations, without a dedicated three-dimensional model. This study presents the three-dimensional gravity-based crustal model of the 85°E Ridge, constructed by integrating satellite-derived gravity data with regional seismic constraints. After removing the gravitational contributions of bathymetry, oceanic crust, and upper mantle via isostatic equilibrium corrections, the residual gravity field attributable to sedimentary and ridge masses was isolated. The sedimentary layer was parameterized with a quadratic varying thickness function. Forward and inverse modeling techniques were then applied to this residual field to generate a three-dimensional sediment thickness model. Model performance was assessed by extracting control data points from existing seismic profiles across the ridge corridor. Comparison of observed versus modeled gravity anomalies yielded a root-mean-square (RMS) misfit of 0.74, indicating a satisfactory agreement. An independent seismic line excluded from the inversion was subsequently used for validation. The final model successfully reproduced the key structural and sedimentary features observed in this dataset, confirming both its robustness and predictive capability. Building on these results, a new hypothesis of compression-induced buckling and thrusting is proposed to explain the origin of the 85°E Ridge. In this scenario, compressive stresses associated with regional plate interactions deformed pre-existing crust, initiating magmatic intrusion and ridge uplift along a reactivated fault fabric. This hypothesis offers a unifying mechanism consistent with the ridge's aseismic character, multilayered magmatic composition, and regional tectonic setting.

Keywords: 85°E Ridge, Gravity Anomaly, Satellite Gravity Data, Forward Modelling, Inverse Modelling

AS/OP/08

Carbon (C), Nitrogen (N) and Chromium (Cr) Doped Titanium Dioxide Nanomaterials for Photocatalytic Water Splitting

Gamage UDS[1], Thotawatthage CA[1], Wijewardane HO[1]

[1]*Department of Physical Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka, Mihinthale, Sri Lanka*

Water splitting is a process of breaking down water into hydrogen (H_2) and oxygen (O_2). It is a thermodynamically uphill reaction, with a positive Gibbs free energy change ($\Delta G° = 237$ kJ/mol). When incident light with energy higher than the band gap of a semiconductor catalyst is absorbed, it generates electron-hole pairs in the conduction and valence bands. These charge carriers drive redox reactions similar to electrolysis, electrons reduce water to produce H_2, while holes oxidize water to release O_2. Titanium dioxide (TiO_2) is commonly used as a photocatalyst for water splitting, especially under ultraviolet (UV) light.This study focuses on water splitting using doped TiO_2. Factors such as the catalyst material, band gap energy, and type of light source influence the efficiency of the process. Doping TiO_2 with C, N, and Cr helps to reduce the band gap and improve light absorption, thereby enhancing the water splitting reaction. Scanning Electron Microscopy (SEM) images show that the synthesized particles are round and range in size from 1 to 5 micrometers. UV spectra analysis showed an optimal band gap of 1.975 eV. Energy Dispersive X-ray (EDX) analysis revealed the presence of all three dopants, with Cr showing the highest concentration. Fourier-Transform Infrared Spectroscopy (FTIR) identified peaks corresponding to OH groups, CO_2, and Carbon–Carbon vibrational stretching. Synthesized 0.3 g of K_2CrO_4-doped TiO_2 sample demonstrated photocatalytic effect in water splitting activity under sunlight, as evidenced by bubble evolution. However, based on the observed bubble evolution rate, it can be concluded that this material does not exhibit superior performance compared to other reported photocatalysts for solar-driven water splitting.

Keywords: water splitting, doping, band gap, chromium, characterization techniques

AS/OP/09

Effectiveness of a Health Promotion Intervention Addressing the Determinants of Stress among Undergraduate Students in the Faculty of Applied Sciences, Rajarata University of Sri Lanka

Vidusika LAA[1], Wickramasinghe WAND[2], Fernando WMS[1]

[1]*Department of Health Promotion, Faculty of Applied Sciences, Rajarata University of Sri Lanka, Mihintale*
[2] *Department of Community Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka, Saliyapura*

Background: Stress is a common response to academic and environmental challenges, particularly among science undergraduates who face high workloads and competitive pressures. High stress among undergraduates contributes to increasing mental health problems, academic underperformance and maladaptive coping such as substance use, making it a critical public health concern in Sri Lanka.

Objective: This study was aimed to reduce the stress among first-year applied science undergraduates at the Faculty of Applied Sciences, Rajarata University of Sri Lanka by addressing its determinants.

Methods: A pre-test post-test study was conducted among 50 purposively selected undergraduates aged 20-24 years. Data collection included a self-administered questionnaire with the Perceived Stress Scale and focus group discussions, conducted before and after 3 month intervention. The intervention involved identifying and addressing stress determinants through activities such as awareness sessions, daily schedules, digital break charts and journal writing. The collected quantitative data were analyzed using descriptive statistics such as paired t-test and qualitative data were analyzed thematically.

Results: The most notable improvement was observed in stress related practices, which showed a statistically significant change (p=0.000). In contrast, knowledge (p=0.650) and attitudes (p=0.187) showed no statistically significant differences. Importantly, overall undergraduate students' stress levels reduced, as reflected in improved Perceived Stress Scale, before the intervention 24% of students reported high stress, whereas this dropped to 10% afterward.

Conclusion: These findings highlight the effectiveness of structured health promotion intervention in university settings, demonstrating their potential to reduce stress levels and promote mental wellbeing. It provides a sustainable framework that can be adapted to other higher education contexts to enhance resilience and overall quality of life.

Keywords: Health promotion intervention, Determinants, Stress

AS/OP/10

Sri Lanka's Paleogeographic Evolution During the Breakup of Gondwana: Insights from Geological and Geophysical Evidence

Wasundara RAS, Samaranayake SA[1], Wijewardane HO[1], Dahanayake U[1], Prasanna HMI[2], Subasinghe ND [3], Nalin De Silva[4], Thilakarathna MP [3]

[1]Faculty of Applied Sciences, Rajarata University of Sri Lanka
[2]Faculty of Geomatics, Sabaragamuwa University of Sri Lanka
[3] National Institute of Fundamental Studies, Kandy
[4] Geological Survey and Mines Bureau, Epitamulla road, Pitakotte

The breakup of Gondwana was a diachronous process that shaped the configuration of present-day continents through rifting and magmatism between ~200–125 Ma. Sri Lanka, situated at the junction of India, Madagascar, and Antarctica, provides a key record of this disintegration. This study integrates geological and geophysical evidence, with emphasis on ground magnetic surveys, magnetic susceptibility measurements, structural mapping, and theoretical modeling of dolerite dykes within the Vijayan Complex. Dolerite dykes in Sri Lanka, trending predominantly NNW–SSE, exhibit high magnetic susceptibility values (average ~40 SI) compared to surrounding country rocks (<15 SI). Magnetic anomalies reveal strong remnant components, with consistent signatures across dykes suggesting synchronous emplacement under a stable geomagnetic field. No polarity reversals were observed, reinforcing rotational rather than polarity-change models of continental movement. Forward modeling indicates Sri Lanka was positioned near 50°S during dyke emplacement and experienced a clockwise rotation of ~154°–156° relative to its present orientation. Chronologically, these magmatic events (160–170 Ma) correlate with Karoo (~180 Ma) and Ferrar (~176 Ma) magmatism, as well as dyke swarms in Heimefrontfjella (~165 Ma) and Rajmahal Traps (~125–130 Ma). The results confirm that Sri Lanka was not merely attached to the southern tip of India, as traditionally assumed, but likely aligned with its eastern margin. This reconfiguration better explains both geological correlations and magnetic data. The unique magnetic signatures of Sri Lankan dykes provide critical constraints for Gondwana reconstruction models, underscoring the island's pivotal role in linking Africa, India, Madagascar, and Antarctica during the supercontinent's fragmentation.

Keywords: Gondwana Reconstruction, Sri Lanka, India, Madagascar, Antarctica, Vijayan Complex, Magnetic

AS/OP/11

Evaluation of Induced Breeding Potential of *Labeo heladiva*

Bandara RBMGN[1], Sundarabarathy TV[1], Mudalige AR[2]

[1]*Department of Biological Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka, Mihintale*
[2]*National Aquaculture development Authority of Sri Lanka No. 41/1, New Parliament Rd, Pelawatte, Battaramulla*

Background: *Labeo heladiva* (Teleostei: Cyprinidae) is an endemic minor cyprinid species in Sri Lanka, occasionally harvested from wild populations for consumption. However, it remains underutilized and has not yet been incorporated into aquaculture practices. Despite this, species holds considerable potential as a sustainable, locally available source of nutrition to help combat malnutrition in Sri Lanka.

Objective: This study aimed to assess the feasibility of inducing spawning in *L. heladiva*, a subject for which no previous research or documentation exists.

Methods: Broodstock were collected from Janaranjana Wewa in Kantale, Eastern Province of Sri Lanka (8°16'03.3"N, 81°09'13.0"E), and were not sacrificed during the study. Following one-month acclimatization period, female brooders (969.4±43.2 kg) were injected with the synthetic hormone Ovulin® (sGnRHa + Domperidone) at three dosage levels: 0.5, 0.4, and 0.3 mL/kg of body weight, while males (450.0±10.3 kg) received a uniform dose of 0.25 mL/kg in a ratio of 1male: 1female and each treatment was conducted in triplicate. Embryonic and larval development stages were monitored up to 75 hours of post-egg release.

Results: All hormone treatments successfully induced spawning within a latency period of 9–10 hours. The highest mean egg count (120,825 ±3521) was obtained at the 0.5 mL/kg dosage, while the lowest (59,070 ±2148) at 0.3 mL/kg (P=0.001). Embryonic development of *L. heladiva* was completed within 25 hours, with hatching occurring at 28 hours, producing larvae measuring 5.01±0.41 mm in length. Yolk-sac absorption was observed at 75 hours mean water temperature of 26.5±0.03˚C. Hatchability rates across treatments were 92.39%, 86.96%, 80.41%, while survival rates of post larvae were 69.26%, 73.01%, 80.16% respectively.

Conclusion: In conclusion, *L. heladiva* can be successfully induced to spawn using Ovulin®, with the 0.5 mL/kg dosage proving most effective in enhancing egg production. These findings highlight the potential of this species for aquaculture development and its role in supporting conservation initiatives in Sri Lanka.

Keywords: Induced spawning, Hatchery jars, Hatchability

AS/OP/12

First Report of *Curvularia chiangmaiensis* on *Oryza rufipogon* (wild *Oryza* spp.) in Sri Lanka

Disanayaka DMSA[1], Ferdinandez HS[1], Yapa PN[1], Wijesinghe MM[1], Manamgoda DS[2]

[1]*Department of Biological Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka*
[2]*Department of Botany, Faculty of Applied Sciences, University of Sri Jayewardenepura*

Background: *Curvularia* spp. are typically associated with the poaceous crops, including rice (*Oryza sativa* L.). Sri Lanka is known for its diverse rice genetic resources. *Oryza rufipogon* is the most closely related to *O. sativa*, among the five (05) wild *Oryza* spp. found in Sri Lanka. According to the previous studies, wild *Oryza* spp. are genetically stronger than the cultivated rice varieties. Therefore, fungal pathogens associated with *Oryza rufipogon* can become potential pathogens to *O. sativa* as well. To date, no studies have been conducted to characterise the *Curvularia* spp. associated with wild *Oryza* spp. in Sri Lanka.

Objective: To collect *Curvularia* spp. associated with *Oryza rufipogon* and accurately identify them using morphological and molecular data.

Methods: Fungal pure cultures were obtained using the single spore isolation technique. Colony characters were observed on three different culture media: Potato Dextrose Agar (PDA), Corn Meal Agar (CMA), and Malt Extract Agar (MEA). Fungal isolates were characterised based on micro-morphological and molecular data. During this study, 15 samples with leaf spots, leaf blight, diseased panicles, and dead plant materials were collected. Collected *Oryza rufipogon* samples were authenticated by the National Herbarium, Peradeniya. Isolates were initially identified as *Curvularia* based on morphological and microscopic characteristics. The internal transcribed spacer 1 and 2 with 5.8S region (ITS) partial sequence and glyceraldehyde-3-phosphate dehydrogenase (GAPDH) loci were sequenced and used in multi-locus phylogenetic analysis following the DNA extraction using a sodium dodecyl sulphate (SDS) method, polymerase chain reaction (PCR), and gel electrophoresis. Molecular phylogenetic analyses were performed using both maximum parsimony (MP) and maximum likelihood (ML) criteria for the fresh collections from this study, together with the available ex-type and reference sequences.

Results: The resulted phylogram revealed that the fungal isolate obtained was closely clustered with the ex-type sequences of the *Curvularia chiangmaiensis*.

Conclusion: *Curvularia chiangmaiensis* isolated from *Oryza rufipogon* updates a novel host-fungal association from Sri Lanka herein.

Keywords: *Curvularia*, GAPDH, ITS

AS/OP/13

A Comparative Analysis of Genetic Variations Using ISSR and SSR Markers in Pathogenic *Bipolaris oryzae* Associated with *Oryza sativa* L. in Sri Lanka

Daksha GWD[1], Ferdinandez HS[1], Ranasinghe C[2], Manamgoda DS[3]

[1]*Department of Biological Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka*
[2]*Rice Research and Development Institute (RRDI), Bathalagoda, Ibbagamuwa*
[3]*Department of Botany, Faculty of Applied Sciences, University of Sri Jayewardenepura*

Background: The pathogenic fungus *Bipolaris oryzae* poses a significant threat to rice cultivation worldwide due to its detrimental impact on crop yields and global food security. Despite rice being the staple food in Sri Lanka, brown spot disease and its causative agent remain among the least studied aspects of rice pathology in the country.

Objective: This study aims to analyse the genetic diversity of *Bipolaris oryzae* using inter-simple sequence repeats (ISSR) and simple sequence repeats (SSR) to investigate the genetic variability in Sri Lankan *Bipolaris oryzae* isolates in order to establish proper disease management within the country.

Methods: Paddy leaves with brown spots were collected from different geographical locations in Sri Lanka during the Maha season in 2024/2025. Eight (08) fresh isolates were obtained from field excursions, and three (03) isolates were from the University of Sri Jayewardenepura Culture Collection (USJCC). Sanger sequencing of internal transcribed spacers 1 and 2 with 5.8S (ITS) region, and glyceraldehyde-3-phosphate dehydrogenase (GAPDH) region were carried out following successful DNA extraction and gel electrophoresis, and the sequence reads were incorporated in a multi-locus phylogenetic analysis. Further, dendrograms were generated using the banding patterns of two ISSR markers, ISSR 1 and ISSR 8, and two SSR markers, BOSSR 368 and BOSSR 430.

Results: The resulted phylogram revealed that all the isolates were closely related to the neotype of *B. oryzae*. ISSR 1 and ISSR 8 produced clear, reproducible polymorphic banding patterns, indicating genetic variability among the isolates in the generated dendrogram. However, BOSSR 368 and BOSSR 430 resulted in monomorphic banding patterns.

Conclusion: It can be concluded that ISSR primers are more informative and reliable in investigating the genetic variability in Sri Lankan *Bipolaris oryzae* isolates. The findings may help to develop novel disease-resistant rice varieties through marker-assisted breeding.

Keywords: Dendrogram, GAPDH, Graminicolous fungi

AS/OP/14

Conservation Breeding of *Mystus nanus*: Optimization of Hormonal Induction for Spawning Success

Darshanie PSN[1], Sundarabarathy TV[1] and Mudalige AR[2]

[1]*Department of Biological Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka, Mihintale, Sri Lanka*
[2]*National Aquaculture Development Authority (NAQDA), National Aquaculture Development Centre, Dambulla, Sri Lanka*

Background: *Mystus nanus*, the striped dwarf catfish, is an endemic catfish species in Sri Lanka.

Objective: This study aims to evaluate the most suitable hormone for induced breeding to support captive breeding programs for conservation, without sacrificing any fish.

Methods: Brood stock was collected from the Kala Oya spill in the North Central Province, Sri Lanka ($7^0$59'N $80^0$32'E) which included a total of 27 males with a pointed genital papilla (14.96 ± 4.08 g) and 13 females with a genital pore (24.93 ± 6.25g). They were acclimatized separately in cement tanks for one month and fed with commercial feed (protein 42%) *ad libitum*. Induced breeding was conducted with a sex ratio of 2males: 1female using three hormone treatments at standardized dosages; Ovulin (0.5mL/kg sGnRH analogue + domperidone), LHRHa + domperidone (20µg/kg+ 0.5mg/kg), and HCG (400 IU/kg) and natural breeding as a control in the breeding hapas.

Results: Ovulin successfully induced spawning in all three replicates (100% success), while only one replicate each of LHRHa + domperidone and HCG resulted in spawning (33% success each). Natural spawning was not observed in any tanks. The fertilized eggs were whitish, demersal, and adhesive, with circular shape (1.018 ± 0.000 mm diameter) hatched within 25–32 hours (27–35 °C). The newly hatched larvae (0.293 ± 0.001 mm) remained inactive at the water surface and after the yolk sac was fully absorbed (3days), the larvae became active. Although one way ANOVA revealed no significant differences (P>0.05) among treatments in terms of total eggs spawned, relative realized fecundity, fertilization rate, hatchability, latency period and survival rate.

Conclusion: The overall success indicated that administering Ovulin hormone at a dose of 0.5 mL/kg in female *Mystus nanus* was more effective for induced breeding than the other hormones tested. This suggests its potential application in the conservation of this species.

Keywords: Hormone, Induced breeding, Ovulin

AS/OP/15

Probabilistic Penalty Approaches the Balanced Transportation Problem Using the Ant Colony Algorithm

Premathilaka MHHDN[1], Ekanayake EMUSB[1]

[1]*Department of physical Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka*

Supply chain management and logistics depend on operations research (OR), which focuses on the effective distribution of resources to either maximize profits or minimize overall costs. Identifying practical solutions for transportation-related problems is one of the most important problems in this area. Standard methods are helpful for minimization problems because they are deterministic and cost centered, but they may not be as flexible or adaptive. In order to solve balanced transportation problems without the use of artificial balancing techniques like dummy rows or columns, we present a novel heuristics algorithm in this study that makes use of probability based decision making and fixed penalty values. Building a probability matrix that represents the desirability of every potential allocation is the first step in the suggested approach. To achieve this, the difference between the cost of each individual cell and the highest cost in the matrix is normalized. The difference between the highest and next highest probabilities is then used to compute penalties for each row and column. There is no need for frequent recalculations because these penalties stay the same throughout the allocation process. The algorithm chooses the cell with the highest probability within each iteration after identifying the row or column with the uniquely highest penalty (ignoring ties). When there are ties, the cell with the highest practical allocation and the lowest cost is chosen. Until all supply and demand requirements are met. The total cost of transportation is then computed to assess the final solution. The results show that this approach avoids needless complexity, like recalculating penalties or using dummy variables, while still producing effective and reliable solutions. In the results, my method reduced transportation costs by an average of about 2.7% compared to VAM, with solutions remaining within 98.7% of the optimal value across 20 test cases.

Keywords: Heuristic, Probabilistic Penalty, Transportation Problem

AS/OP/16

Assessment of Heavy Metal Concentrations Along an Urban Gradient Using Spanish Moss (*Tillandsia usneoides*) as a Biomonitoring Tool in Kandy, Sri Lanka

Wijekoon WMNA[1], Jayaratne RL[1], Ekanayaka EMSL[1]

[1]*Department of Biological Science, Faculty of Applied Sciences, Rajarata University of Sri Lanka*

Background: Kandy is known as one of the highly polluted cities in Sri Lanka due to its geographic location, high vehicular traffic, and dense population. *Tillandsia usneoides* (Spanish moss) is an air plant which absorbs their nutrition directly from the atmosphere and acts as a biomonitor for the airborne heavy metals.

Objective: The objective of the study is to assess the heavy metal concentration along the urban gradient using Spanish moss as a biomonitoring tool.

Methods: Spanish moss plants were obtained from the Royal Botanical Garden, Peradeniya, and transplanted at selected locations along the urban gradient considering the Kandy Clock Tower as the urban center. Samples were collected at 4-week intervals over a three-month period and analyzed using ICP-MS (NexION 2000B, PerkinElmer, USA) following microwave-assisted digestion. The distance from the urban center to each location was measured using Google Earth Engine. Analysis was done using Ggplot2, vegan, dplyr and tidyr packages of R Software (version 4.3.1).

Results: Arsenic shows highest concentration within 0-5km (833.0ppb) and it declines with distance (803.0 ppb). The median of as decreases with distance and indicates less variability. In Cd highest median and interquartile range (IQR) showed in the 10-15km (23.0 ppb) range and almost all the distance categories show higher variability reflecting spatial heterogeneity. The highest median Hg concentration was observed in the 15 - 20 km category (8672.00 ppb) and decrease was observed in the overall Hg concentration with urban gradient. When compared with other metals, Hg shows a less variability in most distance categories indicating a uniform distribution. Median Pb concentration steadily increased with distance (596.0 ppb - 769.0 ppb) and IQR is comparatively high which indicates a greater variation. Outliers suggest possible local pollution in all metals.

Conclusion: This study indicates that the pollution levels along the urban gradient is not only affected by the distance but also affected by the localized sources as well.

Keywords: Air pollution, Spanish moss, Urban Gradient

AS/OP/17

Diversity of Lichenized Photobionts and Mycobionts and Phytochemistry of Lichens in the Pilikuththuwa Forest Reserve, Sri Lanka

Liyanaarachchi DPLVP[1], Wanigatunge RP[1], Herath HM[1], Edirisinghe P[1]

[1]*Department of Plant & Molecular Biology, Faculty of Science, University of Kelaniya*

Background: Lichens are symbiotic associations between a fungus (mycobiont), and one or more phototrophic algae and/or cyanobacteria (photobionts).

Objectives: This study was conducted to identify the lichen species in Pilikuththuwa Forest Reserve, screen the phytochemical constituents present in lichen thallus and determine their photobiont and mycobiont partners.

Methods: Ten morphologically different lichen species from tree trunks, branches and rocks were collected from all accessible areas of Pilikuththuwa Forest Reserve. Morphological and anatomical characters were examined and spot tests were used for lichen species identification. Preliminary phytochemical screening was carried out using chloroform, ethyl acetate, acetone and methanol extracts. Cyanobacteria, algae and fungi associated with lichens were isolated separately and identified up to genus level using their morphological characters. To isolate cyanobacteria, the cleaned parts of the lichens were inoculated into cyano-specific liquid BG11 and $BG11_0$ media while Bold Basal Medium (BBM) was used for the isolation of algae.

Results: Eight lichen species were tentatively identified as *Dirinaria* spp. (two species), *Crocynia* spp. (two species), *Graphis* spp. (one species), *Carbocanthographis* sp. (one species), *Ocellularia* spp. (one species) and *Opegrapha* sp. (one species). The methanolic extract was more active and showed almost all tested phytochemicals such as tannins, saponins, flavonoids, glycosides and carbohydrates in all the lichen samples. Several photobiont genera were observed representing five cyanobacterial genera namely *Dermocarpa*, *Chroococcus*, *Nostoc*, *Synechococcus* and *Gloeocapsa* and five algal genera namely *Cladophora*, *Chlorella*, *Heveochlorella*, *Trebouxia* and *Stichococcus*. The most prevalent cyanobacterial species across all lichen samples belonged to the genus *Synechococcus* while the most prevalent algal species belonged to the genus *Trebouxia*. The five fungal genera, i.e. *Lasiodiplodia*, *Trichoderma*, *Purpureocillium*, *Rhizopus* and *Mucor* were isolated from the collected lichen species and *Lasiodiplodia* sp. was the most commonly occurring species.

Conclusion: Even within the same lichen species, photobiont and mycobiont diversity varied, suggesting unique species-specific photobiont-mycobiont combinations.

Keywords: Lichens, Mycobiont, Photobiont

AS/OP/18

Development and Evaluation of *Elaeocarpus Serratus* (Ceylon Olive) Leaf and Fruit Skincare Gels

Werellagama WMRSS[1], Edirisinghe EMRKB[1]

[1]*Department of Chemical Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka, Mihintale, Sri Lanka*

Background: The global demand for plant-based skincare products is increasing due to their safety, cost-effectiveness and potential as natural sources of bioactive compounds to address skin conditions such as wrinkles and premature aging. *Elaeocarpus serratus* (Ceylon olive) is rich in antioxidants and presents a promising candidate for mitigating skin cell damage.

Objective: This study aimed to formulate herbal skincare gels using leaves and fruits of *E. serratus*.

Methods: Plant extracts were obtained via solvent extraction of 1:2(w/v) specimen-to-water ratio, assisted by sonication and heating at 45°C. These water-based extracts were individually incorporated into Carbomer-940 gel formulations. Both the extracts and the final gel products were evaluated in duplicates for antioxidant activity using the 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging assay, Sun Protection Factor (SPF) using UV-Visible spectrometer at 290-320 nm wavelengths, and heavy metal content using Inductively Coupled Plasma Mass Spectrometry (ICP-MS).

Results: The gel formulated with the fruit extract exhibited superior antioxidant activity (55.02 ± 0.07%), compared to the leaf extract-based gel (50.87 ± 0.10%). Conversely, the leaf extract gel showed a higher SPF value (18.09 ± 0.32), compared to the fruit gel (10.57 ± 0.06, $p < 0.05$). ICP-MS analysis revealed no detectable levels of Hg or Cr in either product. However, the following levels were recorded: Cd:0.45 ppm, Pb:1.40 ppm and As:0.25 ppm in the leaf gel; and Cd:0.43 ppm, Pb:0.95 ppm, and As:0.25 ppm in the fruit gel. All values fall within the safety limits specified by the consumer affairs authority (Hg ≤1 ppm, Cr ≤2 ppm, Cd ≤3 ppm, Pb ≤10 ppm and As ≤3 ppm).

Conclusion: These findings indicate that *E. serratus* leaf and fruit gels are safe for topical use, offering substantial antioxidant properties and significant sun protection. Future research will focus on optimizing the formulations through synergistic combinations of leaf and fruit extracts to further enhance bioactivity and sensory attributes.

Keywords: *Elaeocarpus serratus*, Antioxidants, Skin-gel

AS/OP/19

Synthesis of Carboxymethylated Cellulose from Pineapple (*Ananas Comosus*) Leaf Fiber and its Application for Heavy Metal Ions Adsorption in Industrial Wastewater

Ganga SVGDK[1], Arasaretnam S[1]

[1]*Department of Chemistry, Faculty of Science, Eastern University, Sri Lanka*

Background: The significant volume of post-harvest pineapple leaf residues in agricultural operations presents a sustainable opportunity to develop value-added materials for environmental applications such as heavy metal removal from water.

Objective: This study aimed to synthesize carboxymethyl-modified cellulose from pineapple leaf fiber and evaluate its efficiency in removing lead (Pb^{2+}) and cadmium (Cd^{2+}) ions from aqueous solutions.

Methods: Here, cellulose fibers were isolated from pineapple leaves via alkaline extraction and bleaching processes, followed by chemical functionalization with carboxymethyl groups to yield carboxymethyl cellulose (Cell-CM). The modified cellulose was then evaluated as an adsorbent for heavy metals. Batch adsorption tests employed aqueous solutions of lead (Pb^{2+}) and cadmium (Cd^{2+}) ions at an initial concentration of 100 mg L^{-1}, over a pH range of 1 to 7 at ambient temperature.

Results: Analysis of dried pineapple leaves (PAL) in this study showed notable variation from conventional composition data, particularly highlighting an elevated α-cellulose content of 38.57%, surpassing the hemicellulose fraction of 19.5%. This compositional profile suggests promising potential for adsorbent synthesis. Results of batch adsorption demonstrated that Cell-CM exhibited markedly superior adsorption performance compared to unmodified cellulose, achieving maximum uptake capacities of 62.03 mg g^{-1} for Pb^{2+} and 26.25 mg g^{-1} for Cd^{2+} at pH 6. Notably, equilibrium was attained more rapidly for Pb^{2+} (30 minutes) than for Cd^{2+} (45 minutes). The adsorption isotherms fitted well with the Langmuir model, suggesting monolayer chemisorption on a homogeneous adsorbent surface. Regeneration studies using 1 M HCl indicated that the Cell-CM adsorbent could be recycled more efficiently for Cd^{2+} than Pb^{2+} ions.

Conclusion: Overall, this work establishes pineapple leaf-derived Cell-CM as an efficient, eco-friendly, and cost-effective adsorbent for heavy metal removal from contaminated water, thereby offering a sustainable approach to valorizing agricultural waste while addressing environmental pollution challenges.

Keywords: Adsorption, Cell-CM, PAL

Applied Sciences

Poster Presentations

AS/PP/01

A Reformed Firefly Algorithm to Address the Symmetric Travelling Salesman Problem

Ekanayake EMKC[1], Ekanayake EMUSB[1]

[1]*Department of Physical Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka, Sri Lanka*

In computer science and operations research, the Travelling Salesman Problem (TSP) is a well-known combinatorial optimization problem that focuses on determining the shortest possible route visiting each vertex and returning to the starting point. TSP has applications in planning, logistics, transportation, microchip manufacturing and supply chain management, and etc,. In the domain of combinatorial optimization, exact methods like Branch and Bound and Dynamic Programming can provide optimal solutions, their practical applicability is limited by the growing number of vertices due to rising complexity. As a result, methods such as Genetic Algorithms, Simulated Annealing, and Ant Colony Optimization are commonly used to find near-optimal solutions efficiently. The Firefly Algorithm is a novel type of swarm intelligence that effectively addresses combinatorial optimization problems. It operates under the following key assumptions: fireflies exhibit unisexual characteristics and are mutually attractive, they move randomly when brightness is equal, and their attractiveness is proportional to brightness but diminishes with distance. For the TSP, this algorithm proposes an optimized path using a modified firefly approach. In this research study, a novel approach is proposed for creating a Hamiltonian cycle that changes the distances between edges based on the average value of the connected vertices and prioritizes edges by their attractiveness value in the modified firefly algorithm. The new approach reduces the number of iterations while ensuring high accuracy in solutions. When compared to exact methods such as Branch and Bound and Dynamic Programming, and approximation methods like Nearest Neighbors and Modified Hungarian method, our approach consistently offers more efficient and scalable solutions for the TSP.

Keywords: Attractiveness Value, Firefly Algorithm, Symmetric Travelling Salesman Problem

AS/PP/02

Understanding Correlation between 1d Resistivity Distribution and Geochemistry of Subsurface Water Baring Layer

Sithmini WGM[1], Samaranayake SA[1], Thotawatthage CA[1]

[1]*Faculty of Applied Sciences, Rajarata University of Sri Lanka, Mihintale, Sri Lanka*

Assessing groundwater quality using traditional tube well drilling is often expensive and time-consuming. To address this issue, the present study introduces a non-invasive, cost-effective method that uses electrical resistivity data to predict key water quality parameters eliminating the need for multiple drilling. The main goal was to explore correlations between resistivity measurements and geochemical indicators of water quality. To conduct this analysis, a specialized tool known as "Resist Software" was used to digitize both resistivity and geochemical datasets with the geochemical data obtained from the Water Resources Board, Anuradhapura. These datasets were then examined using scatter plots for natural, normalized, and logarithmic values. Among the three, logarithmic transformation of resistivity values revealed the strongest and most consistent correlations with vital water quality parameters (Adj. R squared = 0.289). In contrast, natural values showed weaker relationships. The findings highlight the importance of logarithmic analysis in bringing out significant trends that remain hidden in raw data. This approach not only deepens our understanding of subsurface water conditions but also provides a reliable tool for evaluating groundwater quality without multiple drillings. This correlation between resistivity and geochemical parameters improve the accuracy of groundwater assessments and hence this method supports better decision making in water resource management and minimizing the risk of investing in tube wells with poor water quality. Ultimately, this study contributes to the growing field of geophysics in hydrogeology and promotes economically viable water exploration practices.

Keywords: Conductivity, Correlation, Forward Modeling, Scatter plots, Vertical Electrical Sounding(VES)

AS/PP/03

Smart Swimming Pool Surveillance System

Fernando D[1], Welgamage M [1], Pasindu S[1], Hasith P[1], Shazry M[1], Weerakoon N[1]

[1]*Department of Computing, Faculty of Applied Sciences, Rajarata University of Sri Lanka*

Drowning is a serious public safety hazard in aquatic areas, where quick responses are required to avoid deadly events. This study recommends developing a smart swimming pool surveillance system based on Artificial Intelligence (AI) and real-time monitoring to detect swimmers, recognize their behaviors, and detect drownings. The proposed system integrates camera-based tracking, posture estimation utilizing the MediaPipe framework, and machine learning-based activity detection to facilitate comprehensive surveillance in designated aquatic areas. There are two AI systems used: a scene classifier and a frame-by-frame activity classifier for identifying whether a swimmer is swimming actively, drowning, or inactive. The overhead cameras utilizing pose landmark detection take video frames and extract body key points from them, and put them in a specified bounding box for normalization. Masking by the user restricts the monitoring to the swimming zones, and real-time visual feedback utilizing color-coded real-time bounding boxes (green for swimming and red for drowning) gives instant swimmer status awareness. The system was trained and tested with a custom-created dataset of 90 videos (30 each) and achieved classification accuracies of 80% for swimming and drowning situations, 60% for frames with inactive scenarios, and ultimately an overall accuracy of 83%. Furthermore, the system is able to provide timely mobile alerts for hazardous activities detected, thus greatly minimizing the response time for life-saving interventions. Although using cameras to detect drowning has been explored in different settings, most previous studies concentrated on open water or general anomaly detection. It uses MediaPipe for real-time posture estimation and combines activity-level and scene-level classifiers to improve decision-making. This research contributes to enhancing pool safety by automating the monitoring tasks and helping lifeguards make important decisions. Future work involves improving detection for multiple persons, refining pose estimation to consider occlusions, and incorporating the system into centralized monitoring systems for large-scale adoption.

Keywords: AI, Image processing, MediaPipe, Scene classification, Surveillance system

AS/PP/04

A Modified Ant Colony Algorithm to determine the Initial Basic Feasible Solution in Balanced Transportation Problems

Ekanayake EMDB[1], Ekanayake EMUSB[1], Rodrigo WNP[2]

[1]Department of Physical Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka

[2]Department of Mathematics, Faculty of Science, University of Peradeniya

The transportation problem is a special problem of logistics management in Operations Research. It considers how to manage resources optimally. The problem is formulated based on linear programming, and the primary objective is to minimize the total cost of transporting the goods from each distribution centre to various warehouses. Based on the amount of supply available at each distribution centre and the amount of demand for warehouses, this problem consists of two types. They are balanced and unbalanced transportation problems. The main step in solving the transportation problem is to obtain an initial basic feasible solution. The optimal solution is efficiently selected according to the accuracy of that solution value. Accordingly, the main objective of this research paper is to test the accuracy of the solution obtained by modifying the ant colony algorithm and applying it to balanced transportation problem (BTP). In this study, the ant colony optimization algorithm, which is a heuristic optimization process based on the foraging behavior of ants, is applied to seek the initial basic feasible solutions. The proposed algorithm is designed to be applicable to transportation problems. The proposed algorithm was implemented using MATLAB to solve some BTPs. Here, 25 problems have been tested, and the algorithm has provided solutions with equal efficiency with an optimal solution of 92%. Its solutions were compared with those of the existing methods for BTPs. Thereby It has been shown that the initial basic feasible solutions obtained by using the proposed alternative algorithm can be obtained with efficiency and accuracy.

Keywords: Ant colony optimization algorithm, Balanced transportation problem, initial basic feasible solution, MATLAB software, Optimal solution

AS/PP/05

Selecting Minimal Inspection Items in Zero-Defect Quality Control Using an Ant Colony Optimization Approach

Amunupura DS[1], Ekanayake EMUSB[1]

[1] *Department of Physical Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka*

In contemporary manufacturing environments, inspection is essential to guaranteeing product quality. However, examining every component with every available inspection tool can be time-consuming and resource-intensive. In order to overcome this difficulty, this research suggests an effective optimization method to determine the minimal number of inspection items needed to find every defective part in a specific production batch. Inspection items are represented by columns and parts by rows in a binary matrix formulation of the problem. If an inspection item's value is 1, it can identify a flaw in a particular part. The proposed approach is based on Ant Colony Optimization (ACO), which has been modified to prioritize inspection items that cover more parts of the product. It focuses on items that have not yet been found while ensuring that the chosen items collectively cover every part. Learning from previous choices is accomplished through adaptive score updates. At first, every inspection item is given an equal score. Inspection items are selected one at a time during each trial until every faulty part is found. Scores are updated by rewarding successful items and slightly lowering unsuccessful ones. Then, the solutions are assessed after each trial to promote exploration. After the process is repeated for a predefined number of trials, the final solution is the optimal set of inspection items. That is, the smallest set that ensures complete defect detection. Three datasets of varying sizes and complexity were used to test the algorithm. They are a small dataset with five parts and four inspection items, a medium dataset with ten parts and eight inspection items, and a large realistic scenario with five hundred parts and fifty inspection items. The algorithm was able to identify a minimal set of inspection items in every case, ensuring complete defect detection. The capacity of the method to minimize inspection effort while preserving complete coverage has been established. This is demonstrated by the fact that the number of selected items was considerably less than the total available in each case.

Keywords: Ant Colony Optimization, Minimal Inspection Items, Zero-Defect Quality Control

AS/PP/06

A District-Wise Analysis of University Admissions in Sri Lanka: Comparing Cut-off Z-scores for Study Programs

Kumari DASR[1], Arivalzahan S[1]

[1]*Department of Mathematics and Statistics, Faculty of Science, University of Jaffna*

The University Grants Commission (UGC) has been releasing district-wise cut-off Z-scores for various study programs. This allows for a comparison of districts based on their cut-off Z-scores for each program. The study programs considered in this analysis are Medicine, Engineering, Law, Management, Computer Science, Physical Sciences, Agriculture, and Bioscience. The average cut-off Z-scores across different universities have been calculated for each study program from 2010 to 2021. For a particular study program, there are different cutoffs for different universities. The averages across universities have been calculated for each district and study program. The main objective of this study is to determine whether there are statistically significant differences in the average cut-off Z-scores among districts for each study program. The one-way analysis of variance (ANOVA) technique has been employed for this purpose. If a significant difference is found, further analysis using the Least Significant Difference (LSD) test can be conducted to group the districts for each study program. This grouping will help identify the toughest and easiest districts to gain university admissions for each of the eight study programs. The results of this study indicate that there is a significant difference among districts for all study programs. Colombo is the most competitive district to gain admission to the Medical faculty. Matara is the most competitive district for the study programs in Engineering, Computer Science, and Physical Science. Galle is the most competitive district for the study programs in Law, Management, Agriculture, and Bioscience. The districts of Colombo, Matara, Galle, Kandy, Hambantota, Kurunegala, and Kalutara are commonly found in the top group for all study programs. Mullaitivu is identified as the district with the lowest average cut-off Z-score to gain admission to all study programs except Law, while Kilinochchi has the lowest cut-off Z-score for the study program Law. Additionally, the districts of Mullaitivu, Kilinochchi, and Mannar consistently fall into the lowest category across most study programs.

Keywords: ANOVA, LSD Test, Z-Score

AS/PP/07

Impact of Water Hardness on The Reproductive Performances of *Pseudetroplus Maculatus* (Orange Chromide) (Bleeker, 1862)

Jayasiri DGNTL [1], Sundarabarathy TV [1], Mudalige AR [2]

[1]*Department of Biological Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka, Mihintale*
[2]*National Aquaculture Development Authority (NAQDA), Aquaculture Development Center, Dambulla, Sri Lanka*

Background: *Pseudetroplus maculatus* is an euryhaline fish valued as an ornamental fish worldwide, for its bright coloration, small size and active swimming behaviour. However, its lower survival rate under captive conditions has limited its use in Sri Lanka's aquarium trade.

Objective: This study was conducted to address the low survival rates by investigating the effect of water hardness on the reproduction of *P. maculatus,* because no one has studied it yet.

Methods: The brooders were collected from Kala Oya estuary, located in North-Western province of Sri Lanka (8.2947° N, 79.8397° E). The study used four water hardness levels 35.00 (Kandy), 71.20 (Dambulla – Control), 90.00 (Matara) and 178.00 (Jaffna) ppm as $CaCO_3$ representing different regions of Sri Lanka, each tested in triplicates under optimal level of temperature 24–26°C. Male and female fish with mean weight 5–7g were separately acclimated to the experimental water hardness for two weeks. They were fed with a commercial diet with crude protein (42.0%), fat (10.0%) and minerals twice daily at a rate of 5% of body weight. Breeding experiments were conducted using twelve glass tanks (60 x 30 x 18 cm^3), each with a substrate of small rocks and sand to mimic the natural environment. Individual pairs were introduced into each breeding tank in the evening, and breeding trials were carried out in two separate phases; T1 and T2. Completely Randomized Design (CRD) was used as the experimental design while one – way analysis of variance (ANOVA) was used to compare the effect of water hardness.

Results: No significant difference in breeding success ($P > 0.05$) was observed across the different water hardness conditions in both breeding trials. Pre- and post-spawning behaviours remained consistent under all experimental conditions. Although water hardness did not influence fertilization rates or egg hatchability, comparatively higher mean spawning potential was recorded at 90 ppm (T1 = 139.3 ± 29.0, T2 = 138.5 ± 31.8) and 178 ppm (T1 = 84.0 ± 74.7, T2 = 177.5 ± 95.4) hardness levels. The findings suggest that higher water hardness levels (90 -200 ppm) are generally more conducive to successful reproduction of *Pseudetroplus maculatus.*

Conclusion: Since it was confirmed in their breeding performance studies that they keep and protect their hatchlings in sand pits, environmental enrichment such as the use of fine sand or smooth gravel substrate was found to be essential for promoting natural spawning behaviour.

Keywords: Water hardness, Breeding behaviour, Fertility rate, Hatchability, Spawning, Survival

Management Studies

Oral Presentations

MGT/OP/01

Managerial Personality and the Adoption of Sustainability Reporting: A Conceptual framework Integrating Personality Traits into Behavioral Intention

Pathirana AD[1], Ajward AR[2], Shyamanthi ONK[2]

[1]*Department of Commerce, Faculty of Management Studies and Commerce, University of Sri Jayewardenepura*
[2]*Department of Accounting, Faculty of Management Studies and Commerce, University of Sri Jayewardenepura*

Background: Despite the growing emphasis on Sustainability Reporting (SR), particularly in emerging economies, existing literature has focused on organizational and institutional factors, often overlooking the role of individual managerial characteristics. The influence of personality traits on SR adoption remains underexplored, especially in these contexts.

Objective: This study proposes a conceptual model that integrates personality traits into the Theory of Planned Behavior (TPB) to better understand managerial intention towards SR adoption based on a review of prior literature on TPB and personality psychology within sustainability contexts, including over 50 peer-reviewed research. The framework seeks to extend the traditional TPB by incorporating insights from the Upper Echelon Theory (UET) and the Big Five Personality Traits model.

Methods: This study conceptually synthesizes prior frameworks to propose the Personality-Based TPB. The model suggests that personality traits *(openness, conscientiousness, extraversion, agreeableness, and neuroticism)* shape TPB's components; attitude, subjective norms, and perceived behavioral control thereby influencing SR intentions. The framework is intended for empirical validation through structured surveys of managers.

Results: In the proposed conceptual model, managerial psychological factors namely attitude, subjective norms, and perceived behavioral control, along with underlying personality traits, are theorized to influence the intention to adopt SR. Conscientious managers are likely to feel more capable and committed to adopting SR. Open-minded managers may develop more positive attitudes. Agreeable and outgoing managers may be more influenced by others' expectations. On the other hand, managers with higher neuroticism may feel less confident about adopting SR.

Conclusion: This framework offers an innovative lens on managerial-level drivers of sustainability. It highlights the significance of personal attributes in shaping corporate behavior. Practically, it informs leadership development, recruitment using personality assessments, and policymaking, especially in developing economies where individual traits strongly affect organizational practices.

Keywords: Personality-based TPB, Sustainability Reporting

MGT/OP/02

Do Behavioral Biases Impact Individual Investor Decision-Making in the Colombo Stock Exchange

Gunawardhane P[1], Buddhika HJR[2]

[1]*Department of Finance, Faculty of Commerce & Management Studies, University of Kelaniya*
[2]*Department of Finance, Faculty of Commerce & Management Studies, University of Kelaniya*

Background: The study is conducted based on the Sri Lankan stock market. A high level of variation of the All-Share Price Index (ASPI) for the last 10 years of the Colombo Stock Exchange proves the anomalies of the behavior of individual investors and the limited knowledge of behavioral biases.

Objective: This study investigates the impact of behavioral biases on Individual Investor decision-making in the Colombo Stock Exchange (CSE). The confirmation bias, disposition effect, regret aversion, and self-control issues (biases) were selected based on contradicting empirical results of the Sri Lankan stock market over the last 10 years.

Methods: Survey (Questionnaire) method used to collect the responses from the individual investors out of a total of 704,352, as per the CSE report 2023. 384 minimum individual investor responses collected as per the Morgan table. As per the screening, a pilot test was conducted for 30 individuals, and a reliability and validity test was run, which met the minimum requirements. Data were analysed using SPSS, with regression, correlation, and ANOVA tests.

Results: As per the four objectives & four hypotheses developed based on four biases (confirmation bias, disposition effect, regret aversion, and self-control issues), there was a significant impact from all four biases on the individual investment decisions of CSE.

Conclusion: These findings are crucial for investor education, financial advisory practices, and policymaking within the CSE. Raising awareness about behavioural biases can help investors make more rational decisions. Financial advisors can apply behavioural insights to guide clients more effectively, while policymakers can implement regulations and strategies to mitigate the negative impact of biases on investor welfare and market efficiency. The survey was conducted after the COVID-19 pandemic situation, where the outcomes also included those pandemic shocks in the final results, which is inevitable.

Keywords: *Colombo Stock Exchange, Disposition Effect, Regret Aversion*

MGT/OP/03

The Impact of TikTok Influencers on Consumers' Purchase Intention in the Fashion Industry of Western Province.

Iroshana MWUK[1]

[1]*Department of Marketing Management, Faculty of Management Studies, Rajarata University of Sri Lanka*

Background: Social media platforms, especially TikTok, have become powerful marketing channels influencing consumer behavior worldwide. TikTok influencers are rapidly shaping purchase intentions in various industries, including fashion. However, limited research focuses on how specific influencer attributes impact Western Province consumers' purchase intentions in the fashion sector.

Objective: This study examines the impact of five key TikTok influencer attributes celebrity endorsement, source credibility, attractiveness, product celebrity match-up, and meaning transfer on consumers' purchase intention in the Western Province's fashion market.

Methods: A quantitative, cross-sectional survey was conducted using a structured questionnaire comprising 27 Likert-scale items. A sample of 320 TikTok users aged 18-60 from the Colombo district was selected through judgmental sampling. Data from 286 valid responses were analyzed using descriptive statistics, correlation analysis, and simple and multiple linear regression via SPSS software to test the hypothesized relationships.

Results: All five influencer attributes showed significant positive effects on purchase intention when tested individually. Celebrity endorsement (β=0.880, $p<0.001$), source credibility (β=0.705, $p<0.001$), attractiveness (β=0.720, $p<0.001$), product celebrity match-up (β=0.780, $p<0.001$), and meaning transfer (β=0.750, $p<0.001$) each contributed substantially to consumers' purchase intention. When assessed collectively, source credibility and attractiveness showed a diminished effect, suggesting differential importance of attributes in joint influence. The model explains a significant portion of variance in purchase intention, affirming TikTok influencers' relevance in marketing strategies for the fashion industry in Sri Lanka.

Conclusion: This study contributes theoretically by contextualizing influencer marketing attributes within Western Province's fashion market and offers practical implications for fashion brands to leverage specific influencer qualities for enhanced consumer engagement. Future research should expand geographically and incorporate moderating variables for deeper insights.

Keywords: Attractiveness, Celebrity Endorsement, Purchase Intention, Source Credibility, TikTok Influencers

MGT/OP/04

The Mediating Role of Environmental Management Accounting in Linking Environmental Strategy and Environmental Performance: A study based on Listed Manufacturing Companies in Sri Lanka

Senanayake SVCN[1], Senarath SACL[1]

[1]*Department of Commerce & Financial Management, Faculty of Commerce & Management Studies, University of Kelaniya*

Background: Despite increasing external environmental pressures, management accounting in manufacturing firms in Sri Lanka has yet to sufficiently denote environmental costs and externalities, prompting the adoption of Environmental Management Accounting (EMA) as a mechanism for enhancing the sustainability practices of companies. Despite the growing literature on EMA, empirical work examining the mediating role of the EMA construct between environmental strategy and environmental performance is lacking within the context of Sri Lanka.

Objective: This study seeks to better understand the mediating role of EMA on the direct relationship between environmental strategy and environmental performance among publicly listed manufacturing businesses in Sri Lanka.

Methods: A quantitative cross-sectional survey instrument was administered to all manufacturing firms (N=58) operating in Sri Lanka, who are listed on the Colombo Stock Exchange. Following data clean-up, valid responses (n=31) were analyzed using SPSS software. Reliability and validity were determined using Cronbach's alpha and factor analysis. Hypothesized relationships were explored using regression and mediation analyses.

Results: Environmental strategy was found to have a statistically significant positive effect on environmental performance (β=0.64, $p < 0.01$; R^2=0.41). Although the EMA adoption was rather moderate (mean=3.52), its mediating nature on the environmental strategy-environmental performance relationship was significant (indirect effect, $p < 0.05$), increasing the explained variance in environmental performance by 9%. Firms utilizing EMA practices generally reported several improvements in three key areas, such as emissions reductions, operational cost savings from waste reduction, and more efficient usage of energy and water.

Conclusion: Results validate that EMA continues to play an important role in the implementation of environmental strategy, which defines an organization's measurable performance outcomes. Although the sample itself may be limited and may be subject to a non-response bias, the findings obtained still illustrate support for both compliance and competitive advantage, and more importantly align with policy-level assessments to the Sustainable Development Goals Goal 12 (Responsible Consumption and Production), whilst further supporting Sri Lanka's National Sustainability Agenda.

Keywords: Environmental Management Accounting, Environmental Performance, Environmental Strategy

MGT/OP/05

The Impact of E-Learning Platforms on Employee Skill Development: Evidence from the Sri Lankan IT Sector Company

Madhushani WKU[1], Darshani, RKND[2]

[1] *Department of Human Resource Management, Faculty of Commerce & Management Studies, University of Kelaniya*
[2] *Department of Human Resource Management, Faculty of Commerce & Management Studies, University of Kelaniya*

Background: In today's digital workplace, continuous learning and employee skill development hold significant importance for organizational growth. Globally, organizations are increasingly adopting e-learning tools to support workforce skill development. While global studies highlight their effectiveness, limited research exists within the Sri Lankan IT sector. Therefore, this study investigates how e-learning platforms contribute to enhancing employee skills, addressing a critical gap in the local empirical literature.

Objective: This study aims to examine the impact of e-learning platforms on the development of employees' skills. In particular, it focuses on three key dimensions of e-learning platforms as perceived usefulness, quality of learning content, and user engagement. By investigating these dimensions, the research seeks to determine which factor most significantly influence employee skill enhancement through e-learning.

Methods: This study used a quantitative research design to examine the impact of e-learning platforms on employee skill development in a Sri Lankan IT sector company. The target population was employees in the organization, and a sample of 120 employees was selected using convenience sampling. Data were collected through a structured questionnaire based on established measurement scales, with items rated on a five-point Likert scale. The data were analyzed using SPSS.

Results: The study found positive links between all three e-learning platforms factors and employee skill development. Perceived usefulness showed the highest correlation ($r = 0.65$, $p = 0.001$). Content quality ($r = 0.58$, $p = 0.002$) and user engagement ($r = 0.55$, $p = 0.003$) also have a positive impact. The regression results showed that these factors together explained 52.0% of the changes in skill development ($R^2 = 0.520$, $p < 0.001$). Perceived usefulness had the strongest effect ($\beta = 0.42$). And content quality ($\beta = 0.30$) and user engagement ($\beta = 0.27$) also had meaningful effects.

Conclusion: The study highlights the importance of investing in high-quality, engaging, and relevant e-learning platforms to enhance employee skill development. Organizations should adopt user-centric platforms that foster a continuous learning culture and strengthen workforce capabilities through flexible learning opportunities.

Keywords: E-Learning Platforms, Employee Skill Development, IT Industry

MGT/OP/06

Luxury Consumption and Self-Esteem Dynamics: Mediating Role of Attitude Functions in Fashion Retailing - Evidence from Western Province in Sri Lanka

Hednawitharana KR[1], Madhushanka JDT[2], Iroshana MWUK[3]

[1]*Department of Marketing Management, Faculty of Management Studies, Rajarata University of Sri Lanka*
[2]*Department of Marketing Management, Faculty of Management Studies, Rajarata University of Sri Lanka*
[3]*Department of Marketing Management, Faculty of Management Studies, Rajarata University of Sri Lanka*

The rapid growth of luxury fashion consumption in Sri Lanka's Western Province highlights the need to understand its psychological effects. While luxury goods are often associated with status and exclusivity, the mechanisms linking luxury consumption and self-esteem - particularly the mediating role of attitude functions - remain underexplored in the Sri Lankan context. This study aimed to investigate the impact of luxury consumption tendency on self-esteem and to examine the mediating role of attitude functions (social-adjustive, value-expressive, hedonic, utilitarian) among fashion consumers in the Western Province. A quantitative, cross-sectional survey of 384 fashion consumers (aged 18-50) in Sri Lanka's Western Province was conducted using simple random sampling and a validated questionnaire. Data were analyzed using SPSS with correlation, regression, and mediation analyses. Luxury consumption tendency showed a significant positive effect on self-esteem (correlation coefficient $r = 0.4$, regression coefficient $\beta = 0.38$, $p = 0.000$). Attitude functions were found to mediate the relationship between luxury consumption and self-esteem, with social-adjustive and value-expressive functions demonstrating the strongest mediating effects ($p = 0.000$ for both). The sample was balanced by gender (male: 50.0%, female: 50.0%), with the majority aged 22–39 years (60.0%). Luxury consumption tendency significantly enhances self-esteem among fashion consumers, primarily through the mediating effects of social-adjustive and value-expressive attitude functions. The findings suggests that marketing strategies in fashion retailing should account for the psychological functions of consumer attitudes to enhance self-esteem through luxury consumption.

Keywords: Attitude Functions, Luxury Consumption, Self-Esteem

MGT/OP/07

Factors Affecting the Behavioral Intention to Use Digital Wallets among Professionals in the Insurance Industry in Sri Lanka

Sakunthala WPK[1]

[1]*Department of Business Management, Faculty of Management Studies, Rajarata University of Sri Lanka*

Background: The growing digitalization of financial transactions has positioned digital wallets as a vital tool for modern payment systems. However, limited research has examined the behavioral intention to use digital wallets within professional sectors in Sri Lanka, particularly in the insurance industry.

Objective: This study aims to examine the factors affecting the behavioral intention to use Digital wallets among professionals in the Insurance industry in Sri Lanka.

Methods: This research employs a quantitative, cross-sectional survey design. Data were collected through structured questionnaires distributed to 167 professionals in the insurance industry using convenience sampling. Descriptive statistics, correlation, and multiple regression analyses were conducted using SPSS.

Results: The findings reveal that perceived usefulness, perceived ease of use, facilitating conditions, and perceived security significantly impact behavioral intention, while social influence shows no significant effect.

Conclusion: In conclusion, enhancing ease of use, strengthening security measures, improving technical support, and emphasizing the practical benefits of digital wallets are critical to increasing adoption in this sector. This study contributes to the existing body of knowledge by filling a contextual gap in digital wallet adoption research within professional industries in Sri Lanka and offers actionable insights for service providers, policymakers, and researchers.

Keywords: Behavioral intention, Digital wallets, Insurance industry

MGT/OP/08

The Impact of Financial Literacy on Business Performance of Women-Owned SMEs in North Central Province of Sri Lanka

Herath HMYGCS[1]

[1]*Department of Business Management, Faculty of Management Studies, Rajarata University of Sri Lanka*

Background: Despite the increasing presence of women entrepreneurs in the region, many face challenges in accessing and applying financial knowledge, which limits their ability to achieve sustainable business growth.

Objective: This study examines the impact of financial literacy on the business performance of women-owned Small and Medium Enterprises in the North Central Province of Sri Lanka.

Methods: A quantitative research design was adopted, guided by positivist philosophy and a deductive approach. Using convenience sampling, data were collected from 138 women entrepreneurs through a structured questionnaire. Statistical analysis was conducted using SPSS, including reliability and validity testing, descriptive statistics, correlation analysis, and multiple regression.

Results: The findings reveal that financial knowledge, financial skills, and finance-related awareness have a significant positive effect on business performance. Financial attitude, while positively correlated, did not show a statistically significant impact. These results underscore the importance of practical financial competencies and awareness in enhancing profitability, operational efficiency, and customer satisfaction.

Conclusion: The study concludes that improving financial literacy among women entrepreneurs can lead to better business outcomes and contribute to inclusive economic development. It offers region-specific insights and empirical evidence that can inform future research, policy design, and targeted financial education programs.

Keywords: Business Performance, Financial Literacy, Women Entrepreneurs

MGT/OP/09

Enhancing Organizational Commitment through Flexible Work Arrangements during the Public Sector, Sri Lanka

Darshani RKND1

1Department of Human Resource Management, Faculty of Commerce & Management Studies, University of Kelaniya

Background: The COVID-19 pandemic transformed traditional workplace norms, with flexible work arrangements (FWAs) becoming central to organizational continuity. In Sri Lanka's public sector, FWAs were rapidly adopted but remain under-evaluated. This study addresses the need to understand whether FWAs have a lasting impact even after the epidemic, on organizational commitment of employees in public institutions.

Objective: To assess the effect of flexible work arrangements on organizational commitment of public sector employees in Sri Lanka during the post-pandemic of COVID-19.

Methods: A quantitative, cross-sectional survey design was employed. The study was conducted across five government ministries in Colombo. A total of 220 administrative employees were selected using stratified random sampling. Data were collected through a standard questionnaire assessing the perception of FWAs and levels of affective, normative, and continuance commitment. SPSS v25 was used for descriptive statistics, Pearson correlation, and multiple regression analysis.

Results: The analysis revealed a significant positive correlation between FWAs and overall organizational commitment ($r = 0.469$, $p < 0.001$). Regression analysis confirmed that FWAs significantly predict affective commitment ($\beta = 0.383$, $R^2 = 0.217$, $p < 0.001$), with remote work flexibility and schedule autonomy emerging as key predictors. Normative and continuance commitment showed weaker but statistically significant associations with flexible policies.

Conclusion: Flexible work arrangements enhance organizational commitment in the public sector, particularly by strengthening emotional attachment to the organization. Institutionalizing FWAs may support long-term retention and motivation of employees. Managers and policymakers are encouraged to reframe traditional attendance norms, and formalize hybrid work models as appropriate, to meet evolving employee expectations even after the pandemic of COVID-19.

Keywords: Flexible-work, Organizational Commitment, Public Sector

Management Studies

Poster Presentations

MGT/PP/01

Fostering Innovative Work Behaviour through Psychological Empowerment: A Study among Administrative Staff in Sri Lankan Universities

Darshani RKND[1]

[1]*Department of Human Resource Management, Faculty of Commerce & Management Studies, University of Kelaniya*

Background: Administrative staff are central to the efficiency and quality of higher education, yet their role in innovation is rarely explored. In the context of increasing competition and rapid change, encouraging innovative work behaviour (IWB) among non-academic employees is vital for adaptability and institutional growth. This study contributes by focusing on psychological empowerment as a driver of innovation in Sri Lankan universities, addressing a group often overlooked in research.

Objective: To examine the relationship between psychological empowerment and IWB, and to identify which dimensions of empowerment most strongly predict innovative actions among administrative staff.

Methods: A quantitative cross-sectional survey was conducted among 250 administrative employees selected through stratified random sampling from three leading public universities, representing a population of about 2,500. The unit of analysis was individual employees, and the time horizon was cross-sectional. Standardised questionnaires measured psychological empowerment (Spreitzer's scale; Cronbach's $\alpha > 0.70$; validity confirmed through factor analysis) and IWB. Data were analysed using SPSS v26 with Pearson correlation and multiple regression. Hypotheses were developed to test both overall and dimension-specific effects of empowerment on IWB.

Results: A significant positive relationship was found between empowerment and IWB ($r = 0.528$, $p < 0.001$). Regression results showed that meaning ($\beta = 0.312$, $p < 0.01$), competence ($\beta = 0.268$, $p < 0.01$), and autonomy ($\beta = 0.221$, $p < 0.05$) significantly predicted IWB ($R^2 = 0.278$, $p < 0.001$). Staff who perceived their work as meaningful and had autonomy were more likely to propose improvements and implement creative solutions.

Conclusion: Psychological empowerment is a critical enabler of IWB among university administrative staff. Meaning and competence were the strongest predictors, highlighting the need for higher education institutions to strengthen purpose, autonomy, and skill development to unlock innovative potential.

Keywords: Innovation, Psychological Empowerment, Sri Lanka, University Administration

MGT/PP/02

Employee Value Proposition and Its Effect on Employee Retention in Public Sector Banks of Sri Lanka

Paranthaman S[1], Bartholomeusz RB[2]

[1]*Department of Human Resource Management, Faculty of Management, University of Peradeniya*
[2]*Department of Human Resource Management, Faculty of Management, University of Peradeniya*

Background: Employee retention has become a significant challenge for public sector banks in Sri Lanka particularly in the Eastern province due to institutional factors, regional disparities and socio-economic constraints. Although, Employee Value Proposition (EVP) is recognized as an effective approach to strengthen employee retention, there is a lack of studies in the Sri Lankan context, particularly within the banking industry. Further, in many studies, EVP has taken as a holistic concept for the investigation and thus, there is minimal examination on how its dimensions such as rewards, career development and organizational culture contributes to employee retention.

Objective: Therefore, this study aims to examine the impact of EVP on Employee Retention in public sector banks in the Eastern Province of Sri Lanka.

Methodology: The study's methodology reflected a positivism philosophy, as it employed a quantitative approach to objectively measured reality using numerical data. This was supported by a deductive research approach and survey research strategy. The research choice was used as mono method, and the data was collected at a single point in time. The target population of the study was 440 employees in selected public sector banks in the Eastern province. However, responses were gathered from 184 employees using simple random sampling technique. Subsequently, the analysis was done using SPSS version 25.

Results: Based on the model summary in regression analysis, R square value was 0.292. This means approximately 29.2% of the variance in employee retention can be explained through EVP. According to the ANOVA table the F- value was 75.129 and the Sig value was 0.000 ($p<0.05$). This meant that the EVP combination of rewards, career development, and organizational culture significantly predict employee retention. Based on the Coefficient table, 2.059 is the value of the intercept in the regression equation. The coefficient of EVP was 0.494 and it was statistically significant (sig value = 0.000, and it is less than 0.05).

Conclusion: This study contributes to the growing body of knowledge specifically in EVP and employee retention. Even though EVP is companywide, it should align with regional and socio economic needs to make it more meaningful. Simply, banks need to develop a unique EVP that considers employee expectations, organizational priorities and regional factors.

Key Words: Employee Retention, Employee Value Proposition, Public Sector Banks

MGT/PP/03

Artificial Intelligence in Service Management: A Glimpse Ahead

Amarasooriya TSDT[1], Rajapaksha RMSP[1]

[1]*Department of Management Studies, Faculty of Indigenous Social Sciences and Management Studies, Gampaha Wickramarachchi University of Indigenous Medicine, Sri Lanka*

Background: Artificial intelligence is regarded as a multidisciplinary field since it incorporates ideas, techniques, and expertise from many other academic and professional disciplines. Service management and artificial intelligence are becoming more and more combined to improve productivity, responsiveness, and satisfaction among customers. The literature on service management in the context of artificial intelligence is scarce. Therefore, it is a timely requirement to revisit the integration of the above fields.

Objective: The objectives of this study were to identify the common areas covered in the empirical research environment on AI in service management and identify the topics that require further investigation.

Methods: The study was carried out utilizing a Systematic Literature Review (SLR). Authors adhered to the PRISMA guidelines, which are advised for SLRs. Scopus was the database chosen and the terms of "artificial intelligence" and "service management" were searched. After employing both automated and manual filtering methods, the authors ultimately chose 12 research papers from 2018 to 2025 for the study.

Results: The keywords have been divided into five themes based on how they relate to one another. Additionally, the most frequently used keywords have been summarized from the available literature. Artificial intelligence is driving digital transformation in service management by automating routine tasks, improving decision making, and reshaping the delivery of information technology services. AI-driven services deliver measurable results such as greater efficiency, cost savings, innovation, and enhanced sustainability. However, despite these advantages, challenges remain. Artificial intelligence systems often struggle with data dependency, algorithmic bias, lack of transparency, and high implementation costs. There are literature gaps in the areas of machine learning, decision making, deep learning, and sustainability.

Conclusion: This research explores limited literature related to Artificial intelligence in service management, which identifies research gaps and highlights its potential to further digital transformation, improve decision-making, and advance sustainability.

Keywords: Artificial Intelligence, IT Service Management, PRISMA Method, Service Management, Sustainability

MGT/PP/04

Ethnocentric Minds and Local Brands: A Study on Consumer Ethnocentrism, Attitude, and Purchase Intention in Milk powder industry in Sri Lanka

Ranjith HKMP [1], Madhusanka JDT [1], Jayawardane SMDN [1]

[1]*Faculty of Management Studies, Rajarata University of Sri Lanka*

Background: Globalization has increased the presence of international products in Sri Lanka, intensifying competition between local and foreign brands. Although global market integration creates diverse choices for consumers, it also poses challenges for domestic firms.

Objective: This study aims to examine the impact of consumer ethnocentrism on the purchase intention of domestic milk powder products in Sri Lanka, with a focus on the mediating role of consumer attitude.

Methods:A quantitative research design was adopted, targeting milk powder consumers in the Western Province of Sri Lanka. A total of 384 respondents were surveyed. The sample size was guided by the Krejcie-Morgan table, while participants were selected using a convenience sampling approach due to feasibility constraints, resources and time limitation, and this study involves the target population as milk powder consumers in Western province of Sri Lanka. Data were gathered through a structured questionnaire comprising 30 Likert-scale items, Data analysis involved both descriptive and inferential statistics.

Results: All the variables demonstrated acceptable reliability (Cronbach's alpha > 0.7). Correlation analysis indicated strong positive relationships between consumer ethnocentrism, its dimensions, and purchase intention and consumer attitude. The overall research finding noted that cognition and reflexiveness emerged as the most influential factors driving purchase intention, because their B values are higher than other dimensions, suggesting that beliefs about national economic benefit and ingrained buying habits play a central role in supporting local brands. Consumer Attitude partially mediate the relationship.

Conclusion: Finally, the marketers and domestic milk powder manufactures when using of ethnocentric appeals in setting up marketing strategies such as through brand storytelling, local domestic products prioritize campaigns, or culturally resonant advertising, and when developing campaigns more cognition and reflexiveness components of consumer ethnocentrism should focus.

Keywords: Consumer Attitude, Consumer Ethnocentrism, Purchase Intention

MGT/PP/05

Impact of Omni- channel Integration on Customer Loyalty with the Mediating Role of Customer Experience in the Fashion Retail Industry of Colombo

Mathurshana A[1], Madhusanka. JDT[2], Adhikari AMSI[3]

[1]*Department of Marketing Management, Faculty of Management Studies, Rajarata University of Sri Lanka*
[2] *Department of Marketing Management, Faculty of Management Studies, Rajarata University of Sri Lanka*
[3]*Department of Marketing Management, Faculty of Management Studies, Rajarata University of Sri Lanka*

The rapid advancement of digital technologies has compelled fashion retailers in Colombo to adopt Omni-channel integration to meet evolving customer expectations and enhance competitive advantage. This highlights the need to understand its impact on customer loyalty. This study aimed to examine the influence of Omni-channel integration on customer loyalty in the fashion retail industry of Colombo, with a focus on the mediating role of customer experience. A quantitative cross-sectional design was employed, surveying 384 customers selected through simple random sampling from leading fashion retailers in Colombo. The results indicated that a majority of respondents regularly engaged with multiple retail channels. The sample included a balanced distribution of gender and age groups. Reliability and validity of the instrument were confirmed (Cronbach's alpha > 0.80). Data analysis was conducted using SPSS 26, including descriptive statistics, correlation, regression, and mediation analysis. Results showed that Omni-channel integration had a significant positive effect on customer loyalty ($p < 0.001$) and customer experience ($p < 0.001$. Customer experience was found to partially mediate this relationship between Omni-channel integration and customer loyalty. In conclusion, Omni-channel integration enhances customer loyalty primarily through improved customer experience. Fashion retailers in Colombo are recommended to prioritize seamless Omni-channel strategies and invest in customer experience management to foster sustained customer loyalty.

Keywords: Customer Experience, Customer Loyalty, Omni-Channel Integration

MGT/PP/06

Investigation on Customer Perception of Processed Food Color in The Western Province, Sri Lanka

Sonali VDV[1], Vijerathna MPG [2]

[1]*Department of Commerce and Financial Management, Faculty of Commerce and Management Studies, University of Kelaniya, Sri Lanka*
[2] *Department of Applied Statistics, Faculty of Science, University of Colombo, Sri Lanka*

Background: One of the most important organoleptic properties of processed food is its color. The purpose of adding color to food is to restore uniformity of color in the final product and to preserve the natural color that is lost during processing. Food color is known as a specific criterion that is a visual characteristic. It directly impacts the purchasing behavior of customers, as well as their eating preferences and choices. Additionally, the color of food has an impact on its acceptability and recognition.

Objectives: The aims of this study are twofold. Firstly, examine the level of customer perception of processed food color. Secondly, identify the customer perception regarding how food color affects nutritional value among customers in Western Province, Sri Lanka.

Methods: The researchers developed a survey based on previous research studies to collect information relevant to the Sri Lankan context. Data were collected from 297 respondents in Western Province, Sri Lanka. Descriptive statistics and binary logistic regression methods were used to analyze the dataset using the SPSS software.

Results: Our findings revealed that the level of perception of processed food color is high among customers when purchasing processed foods, and the effect of every relevant independent variable is significant on the food color, which affects nutritional value at a significance level.

Conclusion: The color of processed food matters to customer perception. These results can be utilized by various experts in the processed food industry who need to understand the perception of processed food colors among customers in Sri Lanka. This study is limited to the Western Province in Sri Lanka due to the population size and availability of data. Therefore, future research studies can be done using all provinces in Sri Lanka, and a variety of methods can be utilized to validate the dataset comprehensively.

Keywords: Processed food color, Customer perception, and Western province

MGT/PP/07

Factors Affecting the Success or Failure of Government Development Projects in Anuradhapura District

Karunathilaka WGSN[1]

[1]*Department of Business Management, Faculty of Management Studies, Rajarata University of Sri Lanka*

Background: Government development projects are vital for driving socio-economic enhancement, particularly in rural areas like Anuradhapura District. Despite significant investment, many small-scale development initiatives fail to meet their intended objectives due to administrative, financial and socio-cultural and political challenges.

Objective: This study aims to identify the key factors influencing the success or failure of government development projects in Anuradhapura District to inform future project management practices.

Methods: An inductive, qualitative research approach was employed. Data were collected through semi-structured interviews with ten beneficiaries involved in or affected by government development projects. Purposive sampling ensured relevant participant insights. Data were analyzed thematically to identify key patterns and underlying factors.

Results: Thematic analysis reviled four major factors affecting the project failure; Misuse of Funds, Socio-Cultural and Political Influences, Poor Planning and Lack of Project Governance. Successful projects were characterized by Community Awareness of Long Term Benefits and Effective Consultation. Findings highlights the need for strengthened governance and context-sensitive planning.

Conclusion: Improving project governance, adopting strategic planning and enhancing stakeholder participation are critical to ensuring the success of development projects. The study's recommendation can aid more sustainable and effective government-led development initiatives in rural areas of Sri Lanka.

Keywords: Government Development Projects, Project Success, Project Failure, Beneficiaries

MGT/PP/08

The Impact of Knowledge Sharing Behavior on Enhancing Organizational Innovation Capability: A Study in the Sri Lankan Telecommunication Sector Company

Madhushani WKU[1], Darshani RKND[2]

[1] *Department of Human Resource Management, Faculty of Commerce & Management Studies, University of Kelaniya*
[2] *Department of Human Resource Management, Faculty of Commerce & Management Studies, University of Kelaniya*

Background: Knowledge sharing enhances idea generation and problem-solving, promoting innovation. (Nonaka & Takeuchi, 1995; Wang & Noe, 2010). Though International studies support this positive relationship (Lin, 2007; Akhavan & Hosseini, 2016), yet limited research examines it in the Sri Lankan context. Cultural, structural, and organizational factors may influence knowledge sharing differently, highlighting the need to explore how its dimensions drive innovation in Sri Lankan organizations (Hofstede, 2011).

Objective: The main objective of this study is to examine the impact of knowledge sharing behaviors which are knowledge donating, knowledge collecting, and interpersonal trust on organizational innovation capability in ABC Company. The relationships will be tested with measurable indicators for each dimension.

Methods: This study used a quantitative, cross-sectional design and data were collected from 120 employees of a leading Sri Lankan telecommunication company via convenience sampling method. A structured questionnaire measured knowledge donating, knowledge collecting, interpersonal trust, and innovation capability on a five-point Likert scale. Participation was voluntary, with confidentiality assured. The organization provided a relevant context for studying knowledge sharing in a dynamic service environment and the questionnaire enabled efficient statistical analysis. SPSS was used for data analyzing. Limitations include inability to establish causality, potential response bias, and limited generalizability

Results: The sample included gender, age, education, and department to provide context. After screening for missing values and outliers, correlation and multiple regression analyses were conducted. Results showed significant positive relationships between interpersonal trust ($r = 0.66$, $p < 0.001$), knowledge donating ($r = 0.60$, $p < 0.001$), and knowledge collecting ($r = 0.56$, $p < 0.001$) with innovation capability. Regression analysis indicated these variables explained 55% of the variance ($R^2 = 0.55$, $p < 0.001$), with interpersonal trust as the strongest predictor. Limitations include the cross-sectional design, potential response bias, and limited generalizability.

Conclusion: This study shows that building a workplace based on trust is important for improving innovation. Employees are more likely to contribute new ideas when employees feel safe to share and receive knowledge. Also encouraging knowledge donating and collecting leads organizations to become more innovative.

Keywords: Trust, Donating, Knowledge, Collecting

MGT/PP/09

Investigating the Role of AI in Transforming Recruitment: Insights from HR and Talent Acquisition

Sandaruwan EGS [1], Jahan SMI[2], Thilakarathna GGKM[3]

[1]Department of HRM, Faculty of Management, University of Peradeniya
[2]Department of Interdisciplinary Studies, Faculty of Engineering, South Eastern University of Sri Lanka
[3]Department of Management Studies, Faculty of Communication and Business Studies, Trincomalee Campus, Eastern University, Sri Lanka

The method of recruitment has changed dramatically due to the integration of Artificial Intelligence (AI) into Human Resource Management (HRM), which has increased both efficacy and efficiency. This study aims to examine how AI is transforming the recruitment process and its impact on candidate sourcing, screening, and selection. Chatbots, applicant tracking systems, and predictive analytics are examples of AI-based solutions which are increasingly used to automate repetitive tasks, reduce human bias, and raise the accuracy of decisions. This quantitative study investigates the impact of AI-driven recruitment systems in Sri Lanka, focusing on four organizations. Data was collected from 50 executive employees via a structured online survey using Google Forms, comprising Likert-scale items rated on a five-point scale. Statistical analysis was conducted using IBM SPSS Statistics version 30.0.0 and SmartPLS 4 for structural equation modeling (SEM). This study aims to provide empirical evidence on executives' perceptions of AI tools in recruitment, assess the reliability and validity of the measurement model, and examine the structural impact of variables. The findings offer practical implications for HR practitioners seeking to implement or optimize AI-based hiring processes in Sri Lankan organizational settings. AI technologies can enhance HRM innovation by aligning with organizational goals and ethical standards. However, successful implementation requires careful planning, transparency, and continuous evaluation to ensure fairness and accountability. HR practitioners must adapt to AI-driven recruitment solutions in Sri Lanka to improve performance and global competitiveness. Continued research in AI-driven recruitment systems is crucial to address new opportunities and challenges, ensuring businesses stay ahead of the curve in HRM innovation and best practices.

Key words: AI in HRM, Future Recruitment, Recruitment effect on AI

MGT/PP/10

Influence of Pop-Up Advertising on Customer Purchase Intention in the Personal Care Industry of North Western Province, Sri Lanka

Adhikari AMSI[1], Iroshana MWUK[2]

[1]*Department of Marketing Management, Faculty of Management Studies, Rajarata University of Sri Lanka*
[2]*Department of Marketing Management, Faculty of Management Studies, Rajarata University of Sri Lanka*

The rapid growth of internet use in Sri Lanka's North Western Province has positioned digital marketing, especially pop-up advertisements, as a key strategy for personal care brands. This study examines how pop-up advertising elements entertainment, informativeness, credibility, and irritation influence customer purchase intention, grounded in consumer behavior theories such as the Elaboration Likelihood Model. The conceptual framework was adapted from established research to fit the Sri Lankan cultural and market context. Using a quantitative, cross-sectional survey design, data were collected from 384 personal care consumers via convenience sampling, acknowledging limits on generalizability. The questionnaire, adapted from validated scales and pretested for cultural relevance, showed high reliability (Cronbach's alpha = 0.879). Data analysis included descriptive statistics, regression, and structural equation modeling with model fit indices confirming robustness. Findings reveal that informativeness and credibility significantly increase purchase intention ($p < 0.001$), emphasizing trust and content quality's role. Entertainment had a moderate positive effect, while irritation negatively impacted purchase intention ($p < 0.001$), signaling consumer resistance to intrusive ads in this regional market. The results extend international digital advertising literature by contextualizing consumer responses within Sri Lanka's evolving technological environment. Marketers in the personal care sector should focus on culturally attuned, credible, and informative pop-ups that reduce irritation to enhance consumer engagement. Future studies should address ethical concerns and platform-specific effects for a more comprehensive understanding of digital ad effectiveness in emerging markets.

Keywords: Consumer Behavior, Pop-Up Advertising, Purchase Intention

Medicine & Health Sciences

Oral Presentations

MED/OP/01

Knowledge, Attitudes, and Practices of Health Officials in Dengue Prevention in Sri Lanka

Shuja MIM[1], Thilfar ACA[2], Dissanayake DMEB[3]

[1] *Department of Physiology, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*
[2] *Pediatrics Unit, Ashraf Memorial Hospital (AMH), Kalmunai*
[3]*Undergraduate Medical Student, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*

Background: Despite the implementation of the National Action Plan for Dengue Prevention and Control (2019–2023), Sri Lanka continues to experience dengue outbreaks. Health officials play a pivotal role in translating policy into practice, yet evidence on their knowledge, attitudes, and practices (KAP) remains limited.

Objective: To evaluate the knowledge, attitudes, and practices of health personnel towards national dengue prevention policies in Sri Lanka.

Methods: Cross-sectional mixed-methods study of 80 health officials, Medical Officers, Public Health Inspectors, Field Workers, and administrative staff from national and regional units. The quantitative questionnaire (WHO KAP-adapted, translated, and pre-tested) was administered using stratified random sampling by job role. Within each stratum, candidates were computer-randomized from rosters and invited until the pre-specified targets were met, with non-responders replaced by the next randomized candidate. Ten key-informant interviews were purposively sampled. Quantitative analyses used descriptive statistics, one-way ANOVA and χ^2; qualitative data were thematically analyzed

Results: Of the participants, Satisfactory knowledge was observed in 27.5% (≥4/5); positive attitudes in 51.3% (≥20/25); and good practices in 11.3% (≥20/28). Knowledge and practice varied by job role ($p = 0.007$ and $p = 0.006$), while attitudes did not ($p = 0.080$). There was no association between years of service and total KAP ($r=0.18$, $p=0.115$), nor by sex ($t(57) = 1.53$, $p=0.131$). Interviews highlighted delayed resource allocation, fragmented surveillance, limited role-specific training and gaps between policy and operationalization.

Conclusion: The findings highlight significant gaps between national dengue prevention policies and their operationalization, particularly at the frontline. Targeted role-specific training, improved resource allocation, and strengthened multi-sectoral collaboration are vital for translating policies into effective action and achieving the national dengue prevention targets.

Keywords: Dengue, Health officials, KAP

MED/OP/02

Spatial Distribution and the Ecological Drivers of Lung Cancer Incidence in Sri Lanka

Waththuhewa NK[1], Rajapakse RMSI[2,3], Kim SY[3]

[1]*Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*
[2]*Department of Physiology, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*
[3]*Department of Public Health & AI, Graduate School of Cancer Science and Policy, National Cancer Center, South Korea*

Background: Cancer is a growing public health burden in Sri Lanka with lung cancer ranking the second most common cancer in Sri Lankan males. Furthermore, the burden of cancer is disproportionately distributed over space and the detection of high-incidence areas can help targeted cancer prevention.

Objective: This ecological study explored the spatial distribution of lung cancer incidence in Sri Lanka for 2016-2021 and assessed spatial relationships with land cover, fine particulate matter ($PM_{2.5}$), and selected socioeconomic factors.

Methods: Five-year cumulative lung cancer incidence in each of the 25 districts, from the National Cancer Registry, as a percentage of district and sex-wise population, and socioeconomic data from the Department of Census and Statistics were used. Land cover data from the Moderate-Resolution-Imaging-Spectroradiometer (MODIS) and district-wise $PM_{2.5}$ concentrations estimated using satellite-based aerosol-optical-depth data from MODIS, MISR, and SeaWiFS, processed via the GEOS-Chem chemical transport model and spatially averaged to the district level, and downloadable in the Google Earth Engine were used. Spatial clustering was assessed by Global Moran's I (Queen's continuity). Local clusters were identified using Local Moran's I. Ordinary Least Squares (OLS) regression was used to assess associated ecological drivers.

Results: Significant global spatial correlation was observed for lung cancer across 25 districts in males (0.384, p=0.006) and females (0.319, p=0.010). Males exhibited high incidence clusters in Gampaha, Kalutara, and Kurunegala. Female high-incidence clusters were in Gampaha, Kalutara, and Kegalle. The best OLS model for males (adjusted-R^2=0.636) retained $PM_{2.5}$ (β=3.899, p=0.004), urban land cover (β=1.258, p<0.001), elderly population (β=4.615, p=0.012), and per capita income (β=0.001, p=0.052) as positive predictors, and water cover (β=–4.158, p<0.001) as a negative predictor. The 5-year-$PM_{2.5}$ concentration for females had positive coefficient (β=4.75, p=0.065).

Conclusion: Findings reveal significant spatial heterogeneity in lung cancer incidence, with sex-specific patterns and ecological drivers. $PM_{2.5}$ exposure was a significant predictor.

Keywords: Ecological factors, Lung cancer, Spatial analysis, Air pollution

MED/OP/03

Lung Functions Assessment Using Impulse Oscillometry (IOS) in Severe Asthmatic Adolescents During the Asymptomatic Period: A Preliminary Study

Jayarathna RMPI[1], Nayakarathne NMDGB[1], Chandrasiri WAPN[1], Perera NADS[1], Ananda SDWK[1], Nuwangi H[2], Rajapakse RMSI[3,4]

[1]Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka
[2]Center for Health Services Studies, University of Kent, Giles Ln, Canterbury CT2 7NZ
[3]Department of Public Health & AI, Graduate School of Cancer Science and Policy, National Cancer Center, South Korea
[4]Department of Physiology, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka

Background: Impulse Oscillometry (IOS) is a lung function test that measures airway mechanics during quiet breathing offering an alternative to spirometry for diagnosing asthma. Asthma is a heterogenous disease characterized by chronic airway inflammation and airflow obstruction.

Objective: To assess the lung functions of 13-14 years old adolescents with severe asthma, who were asymptomatic for one-month, from Anuradhapura, Sri Lanka.

Methods: A preliminary study was conducted in a simple random sample of 15 adolescents attending government schools aged 13-14 years with severe asthma but were asymptomatic for one month duration. Severe asthma was detected using the validated International Study of Asthma and Allergies in Children questionnaire. Bronchodilators (short-acting: 4h, long-acting: 24h) were withheld before performing IOS. IOS was performed per European Respiratory Society and American Thoracic Society guidelines. The reactance(X) and resistance(R) were measured at frequencies 5 to 20 Hz (R_5, R_{10}, R_{20}, X_5). R_5 measures total airway resistance. R_{10} marks central-peripheral airway transition. R_{20} measures central airway resistance. R_5-R_{20} represents peripheral airway resistance. Resonance frequency (Fres) is the frequency at which the X is zero. The standard cut-off of 150% of the predicted values for R, -0.15 kPa s L^{-1} for X, and 150% cut-off for Fres were considered.

Results: The study sample consisted of 8 males and 7 females. Their BMI ranged from 12 to 23 kgm^{-2}. Two participants exhibited signs of airway obstruction. One participant showed reduced X_5 (<-15 kPa.s.L^{-1}) and elevated R_5-R_{20} (0.38 kPa.s.L^{-1}) indicating peripheral airway obstruction. Other participant had a high Fres of 168.0% of the predicted suggestive of airway disease, but with a normal $R_{5\text{-}20}$ (0.11 kPa.s.L^{-1}) and normal X_5 (-0.09 kPa.s.L^{-1}). Therefore, the participant had evidence of airway disease that could not be differentiated with the current test.

Conclusion: IOS identified airway dysfunction in 2 participants even during an asymptomatic period.

Keywords: Adolescents, Asthma, Lung functions

MED/OP/04

Prevalence, Associated Factors, and Neonatal Complications of Anaemia among Pregnant Women in Kandy District, Sri Lanka: An Analytical Cross-Sectional Study.

Weerawardena PSSB[1], Weerasinghe WMMB[1], Wickramanayake VIM[1], Wickramasinghe WMMD[1], Wijayawardhana UT[1], Wijebandara WMRM[1], Rajapakse RMSI[2,3]

[1]Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka
[2]Department of Physiology, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka
[3]Department of Public Health & AI, Graduate School of Cancer Science and Policy, National Cancer Centre, South Korea

Background: Anaemia in pregnancy is a significant health burden in Sri Lanka, with serious maternal and neonatal risks.

Objective: To explore the prevalence, risk factors, and neonatal anthropometric outcomes of anaemia among pregnant women from Kandy district, Sri Lanka.

Method: The study was conducted in four randomly selected hospitals out of the six hospitals above the base hospital level in Kandy District. Pregnant women admitted in July 2024 were recruited by consecutive sampling until a minimal sample size of 179 participants was reached. An investigator-administered questionnaire in native languages on demographics, nutrition, medical history, and neonatal outcomes was used. Anaemia status was assessed using haemoglobin levels from pregnancy and hospital records. Informed, written consent was obtained from all participants or guardians before data collection.

Results: The sample of 200 participants was aged 18 to 43 years, with 34.5% primigravida and 41% in second gravidity. Highest educational levels achieved were grade 11–12(32%), advanced level (50%), and bachelors (8%). Most participants were housewives (73%), followed by office-workers (10.5%) and teachers (5.5%). Mean first-trimester(T_1) haemoglobin was 11.5 g dL^{-1}(SD=1.7) and third-trimester(T_3) haemoglobin was 12 g dL^{-1}. The prevalence of pre-existing anaemia (Hb<11 g dL^{-1}) and anaemia in third (Hb<10.5 g dL^{-1}) was 28.1% (n=52, 95% CI=21.6–34.6) and 12.9% (n=19, 95% CI=7.5–18.3). Adding lime to green-leafy vegetables (OR=0.272, 95% CI=0.082–0.899, p=0.033) decreased, while adding tomato to green-leafy vegetables (OR=2.990, 95% CI=1.007–8.874, p=0.048) increased the risk of anaemia. Pre-existing anaemia was not significantly associated with birth weight (ANOVA F (60, 124) = 1.375, p=0.070), low birth weight (χ^2=0.236, p=0.627), or newborn length (F (60, 124) = 1.002, p=0.485). Similarly, T_1 haemoglobin (F (60, 124) = 1.014, p=0.465) and T_3 haemoglobin (F (38, 108) =1.063, p=0.393) were not associated with occipitofrontal circumference.

Conclusion: First-trimester anaemia was linked to specific dietary factors, which could inform public health and nutrition programmes aimed at preventing maternal anaemia. However, it showed no significant association with newborn birth-weight, length, or occipitofrontal circumference.

Keywords: Anaemia in pregnancy, Neonatal complications

MED/OP/05

Indoor Particulate Matter Levels in School Classrooms and its Association with Asthma in Adolescents from Anuradhapura, Sri Lanka

Wijemanne AM[1], Sulakkhana MS[1], Dissanayaka DMSD[1], Hordagoda IC[1], Arampath AMAS[1], Dissanayake MRS[1], Agampodi S[2], Rajapakse RMSI[3,4]

[1]*Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*
[2]*International Vaccine Institute, Seoul, Republic of Korea, Graduate College of Cancer Sciences and Policy*
[3] *Department of Public Health & AI, Graduate School of Cancer Science and Policy, National Cancer Center, South Korea*
[4]*Department of Physiology, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*

Background: Indoor particulate matter (PM) is a key determinant of respiratory health.

Objective: To determine indoor PM levels in classrooms and their association with asthma among adolescents.

Methods: A descriptive cross-sectional study was conducted in January 2023 among Grade 8 students across six randomly selected government secondary schools in the Anuradhapura Municipal Council Area, Sri Lanka. Using a video particle counter (VPC-300-EXTECH™), that quantifies airborne PM (0.3 µm to 10 µm) was positioned centrally within each classroom while students were present. Respiratory symptoms were assessed using validated, self-administered International Study of Asthma and Allergies in Childhood questionnaires in Sinhala and Tamil. The minimal sample size was 932, based on a 10.7% asthma prevalence, 2% precision, and a 10% dropout rate. Associations between PM exposure and respiratory symptoms were analysed using the χ^2-test. Informed written consent from parents(s) and/or guardian(s) and assent from adolescents was obtained.

Results: All 32 classrooms exceeded the maximum acceptable temperature, while 84.4% surpassed recommended relative humidity. Among 1,029 adolescents aged 13-14 years, prevalence of current wheeze was 23.7% (n=244; 95% CI: 21.1–26.4) and severe asthma 15.3% (n=157; 95% CI: 13.1–17.6) Indoor PM concentrations of $PM_{0·3}$, $PM_{0·5}$, $PM_{1·0}$, $PM_{2·5}$, $PM_{5·0}$ and PM_{10} exceeded recommended levels in 93.8%, 87.5%, 81.3%, 100%, 93.8% and 93.8% respectively. The highest mean fine particulate matter level was more than 28 times the approved range. Maximum counts exceeded approved ranges for $PM_{1·0}$ (176,048), $PM_{2·5}$ (56,237), and PM_{10} (2,025), 20-times, 103-times, and 29-times, respectively. Minimum $PM_{2·5}$ levels exceeded hazardous limits in 30 classrooms. A significant positive correlation was observed between minimum $PM_{0·3}$ levels and severe asthma (Spearman r=0.46; p=0.01).

Conclusion: Indoor air quality in classrooms was suboptimal, with PM levels exceeding safety limits and significantly associated with severe asthma. This indicates the necessity of developing school-based environmental interventions aimed at improving indoor air quality.

Keywords: Asthma, Indoor air pollution, Particulate matter

MED/OP/06

Assessment of Small Airway Obstruction in Apparently Healthy Young Adults: Analytical Cross-Sectional Study

Nuha SMF[1], Gamage EGVL[1], Fernando SRAR[1], Fernando WHP[1], Fernando WPK[1], Fonseka WADL[1], Chandrasiri WAPN[1], Rajapakse RMSI[2,3]

[1]Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka
[2]Department of Physiology, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka
[3]Department of Public Health & AI, Graduate School of Cancer Science and Policy, National Cancer Centre, South Korea

Background: Small airway obstruction is an early indicator of chronic lung diseases, though its presence and prevalence in asymptomatic young adults remain largely unknown.

Objective: To detect small airway obstruction in apparently healthy young adults using impulse oscillometry (IOS) and spirometry.

Methods: An analytical cross-sectional study was conducted in July 2025 among medical undergraduates of Rajarata University of Sri Lanka aged 24 to 27. Minimal sample size was calculated using a prevalence of 10%, a margin of error of 0.05, and a 10% rate. Medical history, physical examination, 6-minute walk test, and contraindications to lung function testing were used to determine eligible clinically-healthy participants. Spirometry and IOS were performed per American Thoracic Society and European Respiratory Society guidelines. In spirometry, forced expiratory volume in the first second (FEV_1) and forced vital capacity (FVC), maximum forced expiratory (MEF), and in IOS, reactance(X) and resistance(R) at frequencies from 5 Hz to 20 Hz (R_5, R_{10}, R_{20}, X_5) were measured. R_5, R_{20}, and R_5-R_{20} indicate total, central, and peripheral airway resistance, respectively. Spirometry with bronchodilator reversibility was performed when FEV_1: FVC<0.7.

Results: The study sample consisted of 116 participants, aged 24 to 27 years. Pre-bronchodilator reduced FEV_1 was detected in 17(14.7%) and reduced FEV_1: FVC in 2(1.7%) participants. Reduced MEF_{25} and MEF_{50} was observed in 61(52.5%) and 47(40.5%), respectively. An elevated R_5-R_{20}(>0.07 kPa.s.L^{-1}) was observed in 40 participants (34.5%, 95%CI 4.8-15.9), indicative of increased peripheral airway resistance. An abnormally reduced X_5 (less than -0.15 kPa.s.L-1), indicative of reduced peripheral airway reactance, was identified in 12 participants (10.3%, 95%CI 4.8-15.9), and an increased Fres of more than 150% of the predicted value in 22 participants (18.9%, 95%CI 11.8-26.1), which is indicative of airway dysfunction.

Conclusion: Subclinical airway obstruction is identifiable in young, apparently healthy individuals with spirometry and IOS, warranting further investigation.

Keywords: Impulse Oscillometry, Spirometry, Small airway obstruction

MED/OP/07

Prevalence and Factors Associated with Chronic Obstructive Pulmonary Disease (COPD) among Farmers in Anuradhapura, Sri Lanka: An Analytical Cross-Sectional Study

Bandaranayake HATDN[1], Dankotuwa DDTT[1], Chandradasa AGSA[1], Chithmini BT[1], Chandrasiri WAPN[1], Beddegama SU[1], Begum ALF[1], Rajapakse RMSI[2,3]

[1]Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka
[2]Department of Physiology, Faculty of Medicine and Allied Sciences, Saliyapura, Anuradhapura, Sri Lanka
[3]Department of Public Health & AI, Graduate School of Cancer Science and Policy, National Cancer Center, South Korea

Background: Chronic Obstructive Pulmonary Disease (COPD) is the seventh predominant cause of impaired health globally. However, its epidemiology in rural farming communities is unknown.

Objective: To determine the prevalence, GOLD classification, and risk factors of COPD among farmers over 40 years of age.

Methods: An analytical cross-sectional study was conducted among farmers from Anuradhapura, Sri Lanka, using cluster sampling to achieve a minimal sample size of 350 farmers. All participants completed an interviewer-administered questionnaire on demographics, hygienic practices, smoking, agrochemical spraying, and International Primary Care Airway Guidelines (IPAG) questionnaires. Spirometry was performed in a subsample of 50 IPAG-positive participants according to American Thoracic Society and European Respiratory Society guidelines. All IPAG-positive participants underwent the COPD assessment test (CAT®) and modified Medical Research Council (mMRC) Dyspnoea Scale. Factors associated with a $p<0.2$ in χ^2 test and $p<0.05$ in one-way ANOVA were included in a backward conditional logistic regression. A chi-square test (3×2 contingency table) was conducted to assess whether agrochemical spraying, lifetime cigarette use, and lifetime beedi use differed across GOLD classification groups.

Results: The IPAG positive prevalence was 33.14% (n=116, 95%CI=7.55–38.34). The prevalence of GOLD A, B, and E groups was 10.6% (n=37; 95%CI=7.55-14.28), 16.3% (n=57; 95% CI=12.57-20.58), and 5.1% (n=18; 95%CI=3.08 to 8.01), respectively. Spirometry results confirmed 15(30%) participants with irreversible airflow obstruction (prevalence=9.94%, 95%CI:5.73-14.15). Independently associated factors with COPD were smoking more than 100 cigarettes in life (adjusted-OR 2.373, 95%CI: 1.102-5.113), smoking more than 100 beedis in life (adjusted-OR 2.390, 95%CI: 0.926-6.168), spraying agrochemicals (adjusted-OR 2.202, 95%CI: 1.178-4.117), and frequency of changing bedsheets less than once a week (adjusted-OR 1.985, 95%CI: 1.195-3.298), A statistically significant association was not observed between GOLD groups and agrochemical spraying status, lifetime cigarette use or lifetime beedi use ($p>0.05$).

Conclusion: The prevalence of spirometry-confirmed COPD in farmers over 40 years was 9.94% associated with smoking, agrochemical exposure, and poor hygiene.

Keywords: COPD, Farmers, spirometry

MED/OP/08

An Investigation of the Antibacterial Potential of Selected Local Medicinal Plants Belonging to the Fabaceae Family

Gallage HGH[1], Perera J[2], Jeevathayaparan S[1], Jayaweera HPS, Muthunayake NS[1]

[1]*Department of Biochemistry, Faculty of Medicine, Wayamba University of Sri Lanka*
[2]*Department of Microbiology, Faculty of Medicine, Wayamba University of Sri Lanka*

Background: Although antibiotics were thought to be the perfect solution to bacterial infections, the emergence of antibiotic resistance has become a global health issue. The identification of novel plant-based antibacterial drugs is a promising strategy to overcome the problem of antibiotic resistance. Even though, Sri Lanka makes it home to a variety of medicinal plants, most of these plants are unexplored for their antibacterial potential.

Objective: Therefore, the goal of our research is to screen for local medicinal plants with antibacterial activity and utilize that knowledge in novel therapeutic developments.

Methods: Plants belonging to Fabaceae family, *Cassia alata* (candle bush), *Psophocarpus tetragonolobus* (winged beans) and *Dendrolobium umbellatum* (horse bush) are selected for the initial phase of the study. Fresh, aqueous as well as methanol extracts of selected plant leaves were prepared. Standard phytochemical tests were performed to determine phytochemical profiles. Individual as well as synergistic antibacterial activities of leaf extracts against Gram-positive *Staphylococcus aureus* (ATCC 25923) and Gram-negative *Escherichia coli* bacteria (ATCC 25922) were tested using agar well diffusion method. For microbial inoculum, 0.5 MacFarland standardized bacteria were further diluted to obtain the bacteria concentration at 1×10^6 CFU mL^{-1}.

Results: According to our results selected plant species contain a variety of phytochemicals such as tannins, saponins, alkaloids, flavonoids, terpenoids, etc. In antibacterial studies with individual plant extracts, it was found that methanol extracts of candle bush (Zone of Inhibition (ZI) – 15.0 (±1.7) mm) and horse bush (12.0 (±1.0) mm) leaf extracts inhibit *S. aureus*. In synergistic studies, all combinations showed inhibition of *S. aureus* whereas none of the extracts showed inhibition of *E. coli*. This might be due to the presence of a harder cell wall structure in *E. coli* compared to *S.aureus*.

Conclusion: Interestingly, from our initial results we can conclude that selected Fabaceae plants exhibit a potent phytochemical profile and promising antibacterial potential. This study would be a steppingstone to evaluate the synergistic combinations of plant extracts of Fabaceae family, and their efficiency against bacterial infections.

Keywords: Phytochemicals, Antibiotics, Fabaceae

MED/OP/09

Epidemiology of Allergic Rhinitis in 13–14-Year-Old Adolescents from Anuradhapura, Sri Lanka: An Analytical Cross-Sectional Study

Thennakoon TMSL[1], Subhanee KKT[2], Sridharan PS[2], Siriwardhana SJTC[2], Sulakkhana MS[2], Sumanapala SDVK[2], Wijayarathna LS[1], Warnasekara YPJN[3], Rajapakse RMSI[1,4]

[1] *Department of Physiology, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*
[2]*Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*
[3]*Department of Community Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*
[4]*Graduate student, Graduate College of Cancer Science and Policy, National Cancer Center, 323 Ilsan-ro, Ilsandong-gu, Goyang-si Gyeonggi-do, 10408, Republic of Korea*

Background: Allergic rhinitis is often underrecognized and untreated despite its high prevalence and significant impact on the quality of life in a crucial period of physical, emotional, and social development.

Objective: To describe the prevalence, associated factors, and temporal variation of allergic rhinitis, among adolescents aged 13-14 from the Anuradhapura municipal council area, Sri Lanka.

Methods: An analytical cross-sectional study was conducted in thirty-two grade eight classes in six government secondary schools in the Anuradhapura municipal council area in 2023. The sample was randomly selected via multistage sampling and the validated and translated International Study of Asthma and Allergy in Childhood questionnaire was used to assess the prevalence and associated factors of allergic rhinitis.

Results: The study sample consisted of 1029 adolescents with 528(51.3%) males and 501(48.7%) females. Allergic rhinitis symptoms were reported within the past 12 months in 266 (25.9%; 95%CI 23.2-28.6), and at least once in their lifetime in 387 (37.6%; 95%CI 34.6-40.6), while eye symptoms were reported in 142 adolescents (13.8%; 95%CI 11.8-16.0). Nasal symptoms interrupted daily activities in 18.9% (n=195; 95%CI 16.6-21.5), with moderate-to-severe interference in 20.3% (n=54; 95%CI 15.6-25.6). Severe asthma ($p<0.01$, adjusted-OR 5.75; 95%CI 3.79-8.72), sleeping on a rubber-mixed-coir mattress (adjusted-OR 1.61; 95%CI 0.95-2.74) and engaging in play 4-6 times per week (adjusted-OR 1.50; 95%CI 0.98-2.29) were independently associated with allergic rhinitis. From October to February, nasal symptoms occurred more frequently, with monthly precipitation significantly influencing their temporal variation (ß=26.16, $p=0.003$).

Conclusion: Current allergic rhinitis affected more than a quarter of the adolescents while exacerbation of symptoms aligned with a temporal pattern predictable from monthly precipitation. Severe asthma, sleeping on a rubber-mixed-coir mattress, and engaging in play 4-6 times per week were independently associated with allergic rhinitis, which should inform targeted exacerbation prevention measures.

Keywords: Allergic rhinitis, Adolescent Health, Epidemiology

MED/OP/10

Knowledge, Attitudes & Awareness of Ischemic Heart Disease and Medication Adherence among Patients Attending Medical Clinics at the Colombo South Teaching Hospital, Kalubowila, Sri Lanka

Pemasiri WRAM[1], Sugathapala AGH[1], Gamakumbura MK[1], Jayakody JASP[1], Weerasinghe WMRH [2], Perera SARS[2], Warnasekara YPJN[2].

[1]Colombo South Teaching Hospital, Kalubowila, Sri Lanka
[2]Department of Community Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka

Background: Ischemic heart disease (IHD) is a leading cause of morbidity and mortality worldwide. However, there is limited evidence-based data regarding medication adherence of IHD patients in Sri Lanka.

Objective: This study aims to detect knowledge, attitudes & awareness of IHD and medication adherence among IHD patients attending medical clinics at the Colombo South Teaching Hospital, Kalubowila, Sri Lanka.

Methods: This descriptive cross-sectional study recruited consecutively selected participants for six months who attended medical clinics in Colombo South Teaching Hospital, Kalubowila. The Morisky Medication Adherence Scale was applied to assess medication adherence and the reasons for non-adherence. The IHD Fact Questionnaire was used to evaluate the patients' awareness, attitudes, and knowledge regarding IHD.

Results: Among 402 participants, the majority were in 60–69-year age category (48.5%) and male (62.1%, n=249). Most participants reported never smoking (80.5%) and never consuming alcohol (237;59.3%). Almost all patients were aware of the modifiable (100%) and non-modifiable(n=401,99.8%) risk factors of IHD. The majority were aware of the role of physical activity(n=358,89.1%) and healthy diet(n=364,90.5%) in reducing risk. But only 54.7% and 46.8% were able to identify normal blood pressure and normal fasting blood glucose levels respectively. Adherence to medication was 99.8% during the past month, week as well as the day before. Nearly half of the patients reported poor compliance to medication when they were away from home. Only 5% of participants reported discontinuing medication due to side effects, while 3.5% stopped treatment under the belief that they had been cured. Knowledge showed significant positive associations with education level (P<0.001) and BMI (P=0.002), while cholesterol levels (P=0.002) and diabetes (P=0.016) were the most significant negative variables for knowledge.

Conclusion: The participants' overall knowledge and awareness about IHD was satisfactory. While most individuals are already aware of healthy behaviors such as proper diet and regular physical activity, bridging the remaining knowledge and awareness gaps is crucial for universal adoption.

Keywords: Ischemic heart disease, Knowledge, Medication adherence

MED/OP/11

Descriptive Analysis of Development of Severe Outcomes in Russell's Viper (*Daboia Russelii*) Envenoming in Rural Sri Lanka

Chathuranga PADU[1], Waiddyanatha S[1], Siribaddana S[2], Isbister G[3], Silva A[1]

[1]*Department of Parasitology, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*
[2]*Department of Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*
[3]*Department of Medicine, Faculty of Medicine, University of New South Wales*

Background: Russell's viper is the medically most important snake in Sri Lanka due to the high incidence of bites, development of local and systemic envenoming.

Objective: To describe the pattern of severe outcomes in Russell's viper envenoming of a large cohort.

Methods: Data of the Cohort database, in which prospectively recruits all snakebite patients admitted to Teaching hospital, Anuradhapura (THA) were descriptively analyzed. Data from August 2013 to March 2025 with confirmed Russell's viper envenoming and received first-dose of antivenom at THA were extracted. Development of anaphylaxis to antivenom and five severe outcomes, intubation, dialysis, thrombotic-microangiopathy (TMA), hospital stay ≥7days and death, were assessed.

Results: Out of 6983 patients admitted during the study period 895(12.8%) Russell's viper envenomed patients have received first-dose of antivenom at THA. The median age was 44 years (IQR 33-53), and the majority (n=700; 78.2%) were males. Anaphylaxis for antivenom was reported in 222(24.8%) patients. Total of 100 (11.1%) patients have developed one or more severe outcomes which includes 36 patients who have also developed anaphylaxis to antivenom. Hence incidence of severe outcomes attributed directly to envenoming is 7.15%. The reported incidence of each severe outcome is 13(1.5%), 29(3.2%), 24(2.7%), 56 (6.3%), and 9(1.0%) for intubation, dialysis, development of TMA, requiring long stay in the hospital and death respectively. The 36 patients who have developed both anaphylaxis to antivenom and one or more severe outcomes reported 22(2.4%),7(0.8%),21(2.3%),15(1.7%) and 12(1.3%) incidences for intubation, dialysis, requiring long stay in hospital, development of TMA and death respectively.

Conclusion: Any form of severe outcome following Russell's viper bite occurred in approximately 10% of patients, where dialysis and long stay in the hospital were the most common events. Development of anaphylaxis to antivenom in a quarter of patients indicates the severity of that issue compared to venom effects only.

Keywords: Anaphylaxis, Russell's viper envenoming, Severe Outcomes

MED/OP/12

Intestinal Protozoan Infections among Primary School Children in Anuradhapura District, Sri Lanka

Jayakody NK[1,2], Gordon CA[3], Silva NKA[2], Wickramasinghe ND[4], Wickramasinghe WDSJ[5], Natasha Collinson[3], Wijayasekara MAAE[1], Karunarathne CB[6], De Silva NR[7], Weerakoon KG[2]

[1] *Department of Parasitology, Faculty of Medicine, Wayamba University of Sri Lanka*
[2] *Department of Parasitology, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*
[3] *Department of Infection and Inflammation, QIMR Berghofer Medical Research Institute,Brisbane, Australia*
[4] *Department of Community Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*
[5] *Department of Parasitology, Faculty of Medicine, University of Peradeniya, Sri Lanka*
[6] *Department of Physiology, Faculty of Medicine, Wayamba University of Sri Lanka*
[7] *Department of Parasitology, Faculty of Medicine, University of Kelaniya, Sri Lanka*

Background: Intestinal protozoa (IP) are single-celled organisms transmitted via ingestion of cysts from contaminated sources, causing symptoms ranging from asymptomatic to severe diarrhoea. Pathogenic IP include *Giardia duodenalis*, *Entamoeba histolytica*, and *Cryptosporidium parvum*, while *Blastocystis* spp. and *Entamoeba coli* are generally commensals. In Sri Lanka, data on IP is limited, with no studies from Anuradhapura. The most recent study from a tea plantation (Kandy,2016) reported a 0.4% prevalence by microscopy in children.

Objectives: This study aimed to estimate the prevalence of IP infection among primary schoolchildren in Anuradhapura district.

Methods: This cross-sectional study collected stool samples from 688 asymptomatic students from grades 1–5 from 19 schools representing five educational zones in Anuradhapura, with multistage stratified cluster sampling. Stool samples were analysed in triplicate using direct wet smear, formalin-ether concentration, Kato-Katz, Ziehl-Neelsen staining and PCR. Data were analysed descriptively, and prevalence was calculated for each diagnostic method.

Results: Mean age of the cohort was 7.9 ± 0.6 years, with 364(52.9%) being boys. With all tests, 26(3.8%) were positive for pathogenic IP: *G. duodenalis* 15(2.2%), *C. parvum* 13(1.9%), and *E.histolytica* 4(0.6%). Pathogenic IP co-infections were identified in six (0.9%), with the commonest combination being *Giardia* and *Cryptosporidium* (4,0.7%). Microscopy detected pathogenic IP in 1.6%(n=10): *E. histolytica* (3,0.4%), *G. duodenalis* (2,0.3%), and *C. parvum* (5,0.7%). *E. coli* was found in 2.5%(n=17). PCR detected pathogenic protozoa in 3.4%(n=21): *E. histolytica* (1,0.2%), *G. duodenalis* (14,2.2%), and *C. parvum* (10,1.6%). *B. hominis* was detected in 16.5%(n=103).

Conclusions: The study revealed a notable 3.8% prevalence of pathogenic IPs, mainly *G. duodenalis*, including co-infections, among asymptomatic primary school children. Reliance on microscopy alone underestimates these infections, while PCR offers greater accuracy. Although ideal, PCR use must balance cost and feasibility in resource-poor settings. Combining multiple microscopic methods can enhance detection and support better diagnosis and targeted interventions.

Keywords: Intestinal protozoa, Microscopic methods, PCR, Prevalence, Sri Lanka

MED/OP/13

Serum Vitamin D, Adiponectin and Insulin Resistance in Lean Healthy Sri Lankan Adults – A Preliminary Study

Senadheera SPAS[1], Weerakoon HTW[1], Weerakoon KGAD[2], Wijayarathna L[3], Ravihari KP[1], Weerasekara JAAUR[1], Dissanayake DMPK[1]

[1]Department of Biochemistry, Faculty of Medicine and Allied Sciences, Rajatara University of Sri Lanka
[2]Department of Parasitology, Faculty of Faculty of Medicine and Allied Sciences, Rajatara University of Sri Lanka
[3]Department of Physiology, Faculty of Faculty of Medicine and Allied Sciences, Rajatara University of Sri Lanka

Background: Insulin resistance (IR), low vitamin D (VD) and adiponectin levels are factors that are strongly linked with metabolic derangements. These factors significantly and silently elevate non-communicable-disease (NCD) risk even in apparently healthy and lean individuals.

Objective: This study assessed the lipid profile, and IR in a cohort of apparently healthy lean adults in Anuradhapura, Sri Lanka, along with VD and adiponectin levels considering their crucial roles in metabolism.

Methods: Fasting blood samples were collected from volunteers aged 30–59 years with normal body mass index (BMI), waist circumference (WC), and fasting plasma glucose (FPG). Plasma insulin, adiponectin, VD, and lipid profile were assessed, based on South Asian cutoffs. Lipid profile and FPG were assessed by colorimetric-enzymatic-assay-kit method. Insulin, VD and adiponectin levels were determined using immunoenzymatic-assay, chemiluminescent-microparticle-immunoassay (CMIA) and enzyme-linked-immunosorbent-assay (ELISA) respectively. TyG and HOMA-IR indexes were calculated to identify IR based on both Indian (4.65), and Korean (8.45) TyG and HOMA-IR (1.23) cutoffs. VD levels <30.0ng/mL, between 20.0–29.9ng/mL and <20.0ng/mL were considered as low, insufficient, and deficient respectively. Serum adiponectin levels <4 µg/mL were classified as low.

Results: Study consisted of 22 adults (1:1 gender ratio, mean age=42.3±2.8 years). Elevated total cholesterol (TC), LDL-C and triglycerides were detected in 11(50%), 17(77.27%), and 05(22.27%) participants respectively, while HDL-C was low in 06(27.27%). According to the Indian and Korean TyG indices and the HOMA-IR cutoff, 100% (22/22), 59% (13/22), and 45% (10/22) of adults, respectively, were identified as having IR. Low adiponectin was detected in 31.82% (7/22) individuals. VD was low in the majority (n=18,81.82%) and six (27%) had VD deficiency.

Conclusion: The presence of at least one NCD risk factor; dyslipidemia, IR, low VD and adiponectin was detected in 100% of these apparently healthy lean adults, highlighting the need for comprehensive community screening to uncover the hidden burden of non-communicable disease risk.

Keywords: Metabolic derangements, Lean adults, Insulin resistance

MED/OP/14

The Psychological Impact on Postpartum Mothers of Neonates Admitted to Premature Baby Units and Neonatal Wards in a Tertiary Care Setting in Sri Lanka

Arampath AMAS[1], Ananda SDWK[1], Anurudda WUA[1], Arachchi MEK[1], Arachchi WAHWW[1], Abeyrathna DMPLK[2]

[1]*Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*
[2]*Department of Family Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*

Background: The admission of neonates to PBUs and neonatal wards is a highly stressful experience that can profoundly affect maternal psychological health, potentially compromising newborn care and creating distress for the family.

Objective: This study explored the psychological impact, contributing factors, and coping strategies of postpartum mothers whose neonates were admitted to PBUs and neonatal wards at Teaching Hospital, Anuradhapura.

Methods: A descriptive, cross-sectional qualitative study was conducted. Postpartum mothers with neonates in PBUs and neonatal wards were recruited using a feasible cluster sampling approach. Data were collected through the Edinburgh Postnatal Depression Scale (EPDS) screening followed by in-depth interviews. Thematic analysis was employed to identify recurring patterns and insights.

Results: Nineteen mothers participated. Thematic analysis revealed three main categories of stressors. Those are neonatal-related concerns such as invasive treatments and uncertainty about prognosis, family-related challenges including limited support and financial strain, and maternal factors such as young age, prolonged hospitalization, and previous adverse obstetric experiences. Psychological manifestations included sadness, anxiety, hopelessness, guilt, disturbed sleep, and, in some cases, suicidal thoughts. Coping strategies centered on emotional and spiritual support, peer sharing, routine adjustment, and seeking assistance from healthcare staff. Formal psychological services, however, were rarely accessed.

Conclusion: Mothers of neonates admitted to intensive care settings experience significant psychological distress, with depressive symptoms being common. Informal coping strategies predominate, while structured psychological interventions remain underutilized. Strengthening integrated mental health support within neonatal care services is urgently needed in Sri Lanka.

Keywords: Maternal depression, psychological impact, neonatal intensive care, coping strategies

MED/OP/15

Circulating Levels of Tumor Necrosis Factor-Related Apoptosis-Inducing Ligand (TRAIL) and C-Reactive Protein (CRP) in Patients with Chronic Kidney Disease of Uncertain Etiology (CKDu), A Pilot Study

Niroshika KKH[1,2], Herath N[3], Premathilaka S[4], Weerakoon H[2], Jayasooriya RGPT[5], Weerakoon K[6*]

[1]Faculty of Graduate Studies, General Sir John Kotelawala Defense University, Ratmalana, Sri Lanka
[2]Department of Biochemistry, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka
[3]Colombo North Teaching Hospital
[4]Teaching Hospital, Kurunegala
[5]Department of Bioprocess Technology, Faculty of Technology, Rajarata University of Sri Lanka
[6]Department of Parasitology, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka

Background: TRAIL, a leukocyte-derived transmembrane protein, selectively induces apoptosis in transformed cells, including abnormal inflammatory cells and myofibroblasts, while CRP, an acute-phase reactant, increases the systemic proinflammatory response. Thus, both have potential roles in CKDu, a progressive tubulointerstitial disease characterized by cellular apoptosis, inflammation, and fibrosis.

Objective: This study aims to assess the circulating TRAIL and CRP levels in CKDu patients and its relationship with disease severity.

Methods: A cross-sectional study was conducted among 47 diagnosed CKDu patients in different severity stages; 2(n=7,14.8%), 3A(n=10,21.3%), 3B(n=10,21.3%), 4(n=10,21.3%), and 5(10,21.3%) and apparently healthy age and sex matched group (control). Serum creatinine, TRAIL, and CRP were quantified. Comparisons were made with Kruskal-Wallis and Mann-Whitney tests ($p<0.05$).

Results: The patient group (mean age 55.9±10.55 years; 87.2% males (n=41)) had significantly high median TRAIL (232.3 pg/mL. p=0.0065,) and CRP (1.3 mg/L, p=0.0182) levels than the controls (n=10, 144.9 pg/mL, 0.6 mg/L). Stage 3A patients had the highest median TRAIL concentration (362.3 pg/mL) and were significantly higher than controls (p=0.0101). A similar observation was made in CRP levels with a significant peak at 3A (2.85 mg/L, p=0.0057). Although not significant, the median TRAIL and CRP levels in all CKDu stages were higher than the controls.

Conclusion: Elevated circulating TRAIL and CRP levels in CKDu, with a significant peak at stage 3A, may reflect a critical window with the most pronounced apoptotic and inflammatory activity. Further studies with large cohorts and in vitro mechanistic studies are recommended to explore their exact role in CKDu pathogenesis.

Keywords: CKDu, CRP, TRAIL

MED/OP/16

Determination of Reactive Leptospira Serovars in Leptospirosis using Microscopic Agglutination Test at a Tertiary Care Center in Jaffna

Yanuthy T[1], Murugananthan A[2], Coonghe PAD[3], Liyanage C[4], Jayasundara D[5], Warnasekara J[5]

[1]*Department of Nursing, Faculty of Allied Health Sciences, University of Jaffna*
[2]*Department of Parasitology, Faculty of Medicine, University of Jaffna*
[3]*Department of Community and Family Medicine, Faculty of Medicine, University of Jaffna*
[4]*Department of Sociology, University of Colombo*
[5]*Department of Community Medicine, Faculty of Medicine and Allied Sciences, Rajaratta University of Sri Lanka*

Background: The Microscopic Agglutination Test (MAT) serves as the reference serological method for confirming leptospirosis by detecting agglutinating antibodies against diverse *Leptospira* serovars. As *Leptospira* strains exhibit substantial regional variation, developing a regionally optimized MAT panel is essential for accurate diagnosis, particularly in Jaffna, where a recent increase in cases, despite its traditionally low-endemic status.

Objective: This study aimed to determine reactive *Leptospira* serovars in leptospirosis among MAT-positive samples from patients admitted with undifferentiated acute febrile illness to Teaching Hospital Jaffna (THJ).

Methods: It was a descriptive cross-sectional study conducted in the medical wards from September 2023 to February 2024, enrolling all patients clinically suspected of leptospirosis. A 2.5ml blood sample was collected, then serum was separated and tested for MAT using a panel of 11 serovars.

Results: A total of 112 samples (80 acute and 32 convalescent) were tested using MAT. Among them 11 were screening reactive (seven acute and four convalescent) whereas only five were confirmed through runout test. A total of seven (6.25%) samples were reacted with multiple serovars. The identified serovars were; *Leptospira biflexa* (n=5); *Leptospira borgpetersenii* serovar Ceylonica (n=5); *Leptospira interrogans* serovar Bataviae (n=5), Canicola (n=5), Bratislava (n=4), Icterohemorrhagiae (n=3), Weerasinghe (n=3), Wolfi (n=2) and Mankarso (n=1); *Leptospira santarosai* serovar Georgia (n=2); Pyrogenes (n=2). A maximum titre of 1:1600 was observed against *Leptospira interrogans* serovars Brastislava, Canicola, Icterohemorrhagiae, and Bataviae, while 1:800 was seen against *Leptospira borgpetersenii* serovar Ceylonica and *Leptospira biflexa* in acute and convalescent samples.

Conclusion: These findings highlight the necessity of establishing a regionally optimized MAT panel, particularly for districts such as Jaffna, where substantial Leptospira diversity and evolving case patterns may limit the effectiveness of standard panels. The identification of multiple reactive serovars and high antibody titres in both acute and convalescent samples underscore the need for localized panels that reflect current epidemiology.

Keywords: MAT, Leptospira serovars, Teaching Hospital Jaffna.

MED/OP/17

The Economic Burden of Leptospirosis: A Systematic Review of Direct and Indirect Costs

Jayasinghe MS[1], Warnasekara JN[1], Gunarathna SP[1,2], Wickramasinghe ND[1,3], Agampodi SB[1,2,3]

[1]*Department of Community Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka, Saliyapura, Sri Lanka*
[2]*International Vaccine Institute, Seoul, Republic of Korea*
[3]*Center for Public Health, Anuradhapura, Sri Lanka*

Background: Leptospirosis poses a significant global public health and economic burden. However, comprehensive reviews assessing its full economic burden, particularly including direct and indirect costs, remain limited.

Objectives: To systematically review global literature on the magnitude and components of direct and indirect costs associated with leptospirosis.

Methods: This review followed the PRISMA-P 2015 guideline. A comprehensive customized literature search was conducted across PubMed, Web of Science, Scopus, MEDLINE, CINAHL, the Cochrane Library, EconStor and IDEAS with no time limitation. Original economic evaluation studies reporting direct and indirect costs were included, while non-English publications and studies on nonhuman subjects were excluded. Two investigators independently screened titles, abstracts and full texts, and extracted cost data, which were then categorized into direct and indirect costs. All cost values were converted to international dollars (Int$) for comparison.

Results: The initial search yielded 1,270 articles, with 625 duplicates removed. Following the title and abstract screening, 23 articles underwent full-text screening, and five met the eligibility criteria. These studies, conducted between 2007 and 2021, were based in Indonesia, India, Brazil, Bulgaria and Jamaica. According to the preliminary analysis direct costs ranged from Int$30.7 (India) to Int$363,239 (Bulgaria) while indirect costs were Int$30.08 (India) and Int$61.54 (Brazil). Mean length of the hospital stays range from 5.4 - 15 days. Reported direct costs included expenses for registration, medical consultations, medications, laboratory tests, consumables, food, accommodation, and transportation while indirect costs included morbidity related productivity loss focusing on absenteeism.

Conclusion: Few studies have comprehensively assessed the direct and indirect costs incurred by leptospirosis patients. This review highlights the significant economic impact incurred by leptospirosis patients, with direct costs well-documented and categorized, and indirect costs mainly limited to wage loss. Hence, future studies should comprehensively assess all cost components across the leptospirosis patient journey.

Keywords: Economic Evaluation, Leptospirosis, Systematic Review

MED/OP/18

Diagnostic Performance and Durability of a Modified Papanicolaou Staining Method for Cervical Screening: A Cost-Effective Method for Resource-Limited Settings

Sewwandi AHM[1], Silva EH[1], Senarath C[2]

[1]*Department of Medical Laboratory Science, Faculty of Allied Health Sciences, University of Ruhuna, Galle*
[2]*Department of Histopathology and Cytopathology, District General Hospital, Matara, Sri Lanka*

Background: This study investigates the efficacy of a modified Papanicolaou staining method for cervical screening, currently practiced at DGH Matara, Sri Lanka, as the conventional method requires a high amount of alcohol.

Objective: To assess the cytomorphological efficacy and archival durability of the modified Papanicolaou staining method through prospective and retrospective analyses.

Methods: A prospective study (Sept–Nov 2023) analyzed 161 cervical smears from MOH areas in Matara. Paired smears were stained using both conventional and modified Papanicolaou method. The modified method involved replacing the alcohol series for hydration with 70% alcohol. After staining with Harris' hematoxylin and rinsing with tap water, differentiation step in 0.5% HCl and dehydration step with an alcohol series were omitted. Tap water replaced the use of 95% alcohol for rinsing after staining with OG6 and EA50. Slides were blindly assessed by the investigator, two cyto-screeners, and the consultant histopathologist using a standard scoring system, and Quality Index (QI) was calculated. For the retrospective study, 250 modified method slides (50 per year, 2018–2022) were randomly selected. Reference smear chosen per IARC/IAC Atlas. QI calculated and five-year differences analyzed using ANOVA.

Results: Of 152 satisfactory smears, distinct cytoplasmic borders were seen in 98.7% in conventional and 96.7% in modified method. Satisfactory cytoplasmic staining was 60.5% and 57.2%, respectively. Nuclear features were consistently preserved in both methods. QI was 0.932 in conventional and 0.911 in modified method with no significant difference ($p > 0.05$). The modified method decreased costs by 80% by minimizing the use of alcohol. In the retrospective analysis, smears from 2018 to 2022 showed QI values ranging from 0.870 to 0.909. No significant decline ($P > 0.05$) in cytomorphological quality occurred, supporting method's stability and reliability.

Conclusion: The modified Papanicolaou method is a cost-effective, reliable, and stable alternative for cervical screening in low-resource settings.

Keywords: Archival stability, Cervical smear, Cytomorphology, Modified Papanicolaou stain, Quality index

MED/OP/19

Prevalence and Patterns of Anaemia in Adults of Anuradhapura District, Sri Lanka: A Cross-Sectional Study

Wijayarathna LS[1], Samarawickrama ID[1], Athukorala KADPM[1], Malalgoda MGSA[1], Thennakoon TMSL[1], Amarasena PRT[2], Gurunayake KGMBS[3], Kaviratna M[3], Pushpakumara PHGJ[4], Weerakoon KGAD[5], Senadheera SPAS[6], Weerakoon HTW[6]

[1]Department of Physiology, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka
[2]Microbiology Unit, Teaching Hospital, Anuradhapura
[3]Radiology Unit, Teaching Hospital, Anuradhapura
[4]Department of Family Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka
[5]Department of Parasitology, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka
[6]Department of Biochemistry, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka

Background: Anaemia remains a significant global public health concern; however, data on its prevalence, typology, and contributing factors among Sri Lankan adults remain limited.
Objective: This cross-sectional study assessed the prevalence and types of anemia among adults in Anuradhapura, Sri Lanka.

Methods: Sociodemographic information and venous blood samples for full blood count were collected from adults selected using proportional sampling was completed in 16 out of 22 Divisional Secretariats. Anaemia was diagnosed and graded according to WHO hemoglobin thresholds, while red-cell indices were utilized to characterize the anaemia type. Iron deficiency anaemia (IDA) was identified using the Mentzer and Shine & Lal indices. Statistical associations were assessed using Student t-test, and odds ratios considering $p<0.05$ as significant.

Results: Among 352 participants (age mean±SD: 46.6±11 years), the majority were females (n=211, 60.3%) and rural residents (n=266, 75.6%). Anaemia was detected in 73 (20.7%), predominantly mild (67.1%, n=49). Of the anaemic patients, 47.9% (n=35) and 46.6% (n=34) had hypochromic-microcytic and normochromic-normocytic anaemia, respectively. Anaemia was significantly more prevalent among females (n=54, 74%, $p<0.001$), particularly those of reproductive age (n=36, 66.7%, OR=1.72, 95%CI=1.019-2.902). Additionally, 22.7% (n=80) with normal hemoglobin exhibited low mean corpuscular volume (MCV) or (MCH), suggestive of latent/ subclinical anaemia. Individuals with latent anaemia had significantly higher mean red-cell distribution width (RDW) (14.01±1.55) compared to those with normochromic-normocytic anaemia (13.25±0.73, $p=0.0049$) and normal individuals (13.61±0.98, $p=0.014$). Moreover, Mentzer and Shine & Lal indices suggested IDA in 58 (79.5%) and 47 (64.4%) anaemic adults, respectively.

Conclusion: Anaemia is prevalent among one in five adults in Anuradhapura, particularly the females of reproductive age. The detection of latent anaemia among 22% and the identification of iron deficiency as the underlying cause in over 60% highlights the need for strengthened surveillance, precise aetiological assessment, and targeted nutritional interventions to address anaemia in this region.
Keywords: Adults, Anaemia, Anuradhapura

MED/OP/20

Optimizing Leptospirosis Diagnosis in Sri Lanka: Selection of Regional Serovar Panel for Cost-Effective MAT Implementation

Aswaddumage DD[1], Sewwandi AHM[1], Menike WGYDK[1], Premalal WHAT[1], Kappagoda CN[1], Agampodi TC[4], Senevirathna I[3], Warnasekara YPJN[1], Jayasundara JMDD[2], Agampodi SB[5]

[1]Department of Community Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka
[2]Department of Microbiology, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka
[3]Department of Biochemistry, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka
[4]Epidemiology, Public Health, Impact Unit, International Vaccine Institute, Seoul, 08826, Republic of Korea
[5]Innovation, Initiatives & Enterprise Development Department, International Vaccine Institute, Seoul, 08826, Republic of Korea

Background: Leptospirosis remains underdiagnosed in Sri Lanka despite its endemicity. The Microscopic Agglutination Test (MAT) is the recommended diagnostic method; however, its use is restricted to a few laboratories due to the high cost of maintaining live serovars, procedural complexity, and the lack of region-specific panels. Although previous studies have reported reactive serovars in Sri Lanka, updated evidence from clinically suspected patients in the North Central Province (NCP) remains extremely limited.

Objectives: To identify the most prominent reactive *Leptospira* serovars in clinically suspected leptospirosis patients in NCP, to support the development of region-specific, limited-serovar MAT panels.

Methods: A total of 329 serum samples, received between May 19, 2022, and July 18, 2025, from four government hospitals in the NCP, were tested at the Public Health Research Laboratory, Rajarata University, using an 11-serovar MAT panel. MAT positivity was defined as a titre ≥1:400 in acute or paired samples, or a four-fold rise in titre.

Results: Seventy-one samples (21.6%) were positive, with the highest diagnostic MAT titres at ≥1:3200 (n=28, 39.4%), 1:1600 (n=22, 31%), 1:800 (n=12, 16.9%), and 1:400 (n=9, 12.7%). Fifty-eight (81.7%) showed seropositivity in acute-phase samples, while 13 (18.3%) were confirmed through paired sera. All 11 serovars exhibited varying degrees of seropositivity. Eighteen patients (25.4%) reacted to a single serovar, whereas 53 (74.6%) showed cross-reactivity with two or more serovars. Serovar Icterohaemorrhagiae was the most frequently reacted serovar (n=54, 76.1%), followed by Canicola (n=49, 69%), Bratislava (n=45, 63.4%), and Patoc (n=42, 59.2%). Serovar Bratislava was the predominant serovar to yield the highest titre (≥1:3200) in 18 (25.4%) patients. Overall, 64/71 (90.1%) samples showed seropositivity with at least one of these four predominant serovars, highlighting their diagnostic relevance.

Conclusions: This study demonstrated four predominant *Leptospira* serovars accounted for 90.1% of seropositivity with samples from NCP. These findings support the use of region-specific MAT panels with fewer serovars as a feasible approach to improving diagnostic coverage.

Keywords: Leptospirosis, MAT panel, Seropositivity.

MED/OP/21

Diagnostic Implications of Sustained High MAT Titres for the Interpretations of Leptospirosis at Six Months Post-Infection.

Menike WGYDK[1], Warnasekara YPJN[1], Agampodi SB[2], Jayasundara JMDD[3]

[1]*Department of Community Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*
[2]*Inetrnational Vaccine Institute, Seoul, South Korea*
[3]*Department of Microbiology, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*

Background: Microscopic Agglutination Test (MAT) remains the key diagnostic tool during the immune phase of Leptospirosis. However, the long-term data on persistence antibody titres following acute leptospirosis is scarce, which may complicate the interpretation of MAT in endemic regions with previous exposure or past infection.

Objective: This study aimed to investigate the persistence of antibody titres over six months following acute leptospirosis and to assess their impact on the interpretation of MAT results for diagnosis.

Methods: In the Rajarata Leptospirosis Cohort, patients with acute-phase MAT titres ≥1:400 (diagnostic cut-off for symptomatic cases) are followed longitudinally. Of the 46 patients who completed six months of follow-up, paired serum samples (acute and six-month) were successfully collected from 18 individuals. These were analyzed at the Public Health Research Laboratory, RUSL, using an optimized 11-serovar MAT panel under rigorous quality control.

Results: The maximum titres of the 18 acute samples were, 1:3200 (n=5), 1:1600 (n=4), 1:800 (n=8), and 1:400 (n=1). The most commonly reactive serovars in the acute samples were *Leptospira interrogans* serovar Bratislava (n=16), Icterohaemorrhagiae (n=16), Canicola (n=11), Bataviae (n=11) and *L. santarosai* serovar Georgia (n=11). Among these, serovar Bratislava was the predominantly reactive in 13 (72.2%) samples. At six-month follow-up, none had clinical features, but all 18 samples remained reactive with maximum titres of 1:3200 (n=1), 1:1600 (n=1), 1:800 (n=8), 1:400 (n=4) and 1:200 (n=4), with 10 (55.6%) had titres ≥1:800 (cut-off without symptoms). Moreover, serovar Bratislava was the predominantly reactive serovar in 15 (83.3%) follow-up samples, while a change in the predominant serovar was observed in 2 (11.1%) samples.

Conclusion: Persistent high MAT titres at six months post-infection indicate a sustained immune response, potentially misclassification of past infections as acute leptospirosis. In endemic regions, MAT results should be interpreted with clinical suspicion to improve diagnostic accuracy, highlighting the need to redefine MAT cut-off titres for acute infection in high-endemic regions.

Keywords: Immune response, Leptospirosis, MAT

MED/OP/22

Seroprevalence and Incidence of Hepatitis A virus among Pregnant Women in Anuradhapura District, Sri Lanka: A Cohort Study

Premalal WHAT[1], Senavirathna I[2], Jayasundara JMDD[3], Warnasekara YPJN[1], Kappagoda CN[1], Menike WGYDK[1], Sewwandi AHM[1], Aswaddumage DD[1], Agampodi T[4], Zellweger R[4], Agampodi SB[4]

[1]Department of Community Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka
[2]Department of Biochemistry, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka
[3]Department of Microbiology, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka
[4]International Vaccine Institute, Seoul, South Korea

Background: Hepatitis A is commonly considered as a disease associated with inadequate Water, Sanitation, and Hygiene (WASH) practices and is not regarded as a major public health issue in Sri Lanka. However, evidence indicates that transmission remains high. In particular, data on HAV immunity during pregnancy remain scarce, especially in rural provinces.

Objective: To determine the seroprevalence of anti-HAV antibodies and the seroincidence of Hepatitis A among pregnant women in the Anuradhapura District, Sri Lanka.

Methods: This study was conducted using a bio bank of serum samples collected and stored within the Rajarata Pregnancy Cohort (RaPCo), a population-based, prospective maternal cohort established between July and September 2019, Pregnant women were enrolled at <12 weeks' gestation and were followed up at 25-28 weeks' gestation. Venous blood was obtained at both time points. Stored serum samples were analyzed for anti-HAV IgG antibodies using the WANTAI HAV-IgG competitive ELISA, following the manufacturer's protocol and performed by trained laboratory personnel.

Results: The baseline serum samples 1846 were available for participants of which 971 were followed up. Of the baseline samples, 1,789 were positive for anti-HAV IgG, indicating a seroprevalence of 96.9% among pregnant women. Of the 35 baseline negative women, 5 had seroconversion during the follow-up. The median duration of follow up was 129 days, amounting to an incident rate of 11.09/ 10000 persondays. Of the five seroconversion cases, two were reported from Galenbindunuwewa, while one case each was identified in Rajanganaya, Kekirawa, and Polugaswewa.

Conclusion: The high anti-HAV IgG seroprevalence among pregnant women in Anuradhapura District indicates widespread prior exposure and natural immunity against the virus. The observed incidence rate suggests a concerning level of ongoing HAV transmission during pregnancy, despite the high baseline immunity. Continued surveillance is warranted to detect potential shifts in HAV epidemiology with changes in living standards.

Keywords: Hepatitis A, Pregnant women, Sri Lanka

MED/OP/23

Exploring Components of Intangible Costs across Income Classifications in Global Health Science Research: Findings from a Scoping Review

Lalani JMG[1,2], Wickramasinghe ND[1], Prasanna RPIR[2], Agampodi TC[1], Agampodi SB[1]

[1]*Department of Community Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka, Saliyapura, Sri Lanka*
[2]*Department of Economics, Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka, Mihintale, Sri Lanka*

Background: Intangible cost (IC) in cost-of-illness (COI) studies are not well defined. Exploring the components of IC across income classifications will help to bridge global health disparities and develop standardized methods to assess IC in global health research.

Objective: To describe the variation in individual perspectives of IC components across countries classified by income level.

Methods: A scoping review was conducted following Joanna Briggs Institute guidelines. Electronic searches were performed across eight databases using terms related to IC. English-language primary studies using the term "intangible cost" in disease/health contexts were included without restrictions on time or population. Identified IC components were classified and analyzed according to World Bank income classifications.

Results: Of the 954 articles retrieved, 76 met inclusion criteria, predominantly from high-income countries (HICs) (n=41, 53.9%), with fewer studies from lower-middle-income (LMICs) (n=24, 31.6%) and upper-middle-income countries (UMICs) (n=11, 14.5%), and none from low-income countries (LICs). IC was categorized into three main domains: physical, psychological, and social. The physical domain encompasses direct bodily impacts, complications due to disease/condition, and management challenges. Psychological domain captured emotional and behavioral responses to disease and treatment, including well-being effects and perceived social issues. The social domain highlighted social implications of the disease process. HIC included detailed and comprehensive accounts, emphasizing the physical domain and uniquely reporting disease complications. UMIC studies primarily focused on psychological symptoms tied to social factors but had limited exploration of social aspects, concentrating mainly on financial issues. LMIC research included the majority social domain, addressing social implications more broadly.

Conclusion: IC literature overrepresents HICs, focusing on the physical and psychological components, while LMICs focus more on the social domain. UMICs had limited social domain coverage. Achieving a comprehensive global understanding of IC components requires further research from LICs and balanced representation across all domains and income groups.

Keywords: Global health science research, Income classifications, Intangible costs

MED/OP/24

Superstitious Attribution and Perceived Post-Vaccine Effects: Drivers of Vaccine Hesitancy in Rural Sri Lanka

Nayakarathne NMDGB[1], Nawagamuwa CP[1], Nawarathna NPCG[1], Nawarathna WDK[1], Nawarathna WSPS[1], Gunasekara SD[2], Warnasekara YPJN[2]

[1]*Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*
[2]*Department of Community Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*

Background: In many rural communities, superstitious and astrological beliefs continue to shape how health and illness are understood. Everyday health changes, such as age-related conditions or coincidental illnesses, are often misattributed to prior vaccination. These belief-driven perceptions can reinforce fear, mistrust, and hesitancy toward future doses, emphasizing the need for public health strategies that address cultural and cognitive factors influencing vaccine confidence.

Objective: To determine the prevalence and associated factors for complications perceived by participants as being related to COVID-19 vaccination, and to identify predictors of future vaccine hesitancy in rural Sri Lanka.

Methods: A quantitative study with a cross-sectional analytical study design was conducted in the rural Anuradhapura Sri Lanka, using a self-administered questionnaire developed by the researchers, and the data obtained were analysed with 95% confidence interval using descriptive and analytical statistics.

Results: The sample consisted of 541 participants who have received at least one dose of the vaccine. In our population, 319 (59.0%) were females, and the mean age was 46.9 years. 419 (77.4%) participants were educated below ordinary levels. While 384 (71.0%) of population believes the vaccine was effective, 259 (47.9% 95%CI 44%-52%) regrets accepting the vaccine. 300 participants (55.4%) had developed complications perceived as being related to the vaccine and the commonest complications were joint pain (n=184, 34.0%), back pain (n=170, 31.4%), fatigue (n=135, 24.9%) and muscle pain (n=121, 22.4%). Independent predictors associated with developing complications included female gender (OR 2.57, 95% CI 1.10-2.25), increasing age (OR 1.03, 95% CI 1.01-1.04) and having a familial chronic disease condition (OR 1.69, 95% CI 1.18-2.42). 365 (65.8%) of the population will not accept a new vaccine in a future pandemic. People who have related the complications with COVID-19 vaccine (OR 5.63, 95% CI 3.80-8.56) and who believes in astrology (OR 1.54, 95% CI 1.02-2.34) are the least likely to accept.

Conclusion:

Perceptions relating the complications to the vaccine were shaped by various sociodemographic and cultural factors, and the along with the experiences of recent vaccination, the future vaccine acceptance is at risk, emphasizing the necessity of targeted education and trust building.

Keywords: COVID-19, vaccine complications, vaccine hesitancy

MED/OP/25

The Healing Journey of Farmers after Snakebite: A Qualitative Study from Anuradhapura

Perera DUD[1], Perera NADS[1], Perera BMM[1], Perera MAHN[1], Perera KSN[1], Silva NKA[2]

[1]*Faculty of Medicine and Allied Sciences, University of Rajarata, Sri Lanka*
[2]*Department of Parasitology, Faculty of Medicine and Allied Sciences, University of Rajarata, Sri Lanka*

Background: Snakebite disproportionately affects rural, low-income communities, causing significant disabilities. The Anuradhapura district has the highest snakebite incidence, driven by farming activities and habitat overlap.

Objectives: We aimed to explore the challenges, experiences, and perceptions of snakebite victims and their family members of a farming community in Anuradhapura, Sri Lanka.

Method: The study included Sinhala-speaking adult farmers admitted to Teaching Hospital Anuradhapura following snakebites. On-site Semi-structured in-depth interviews were conducted with victims and their first-degree relatives or partners at discharge separately, followed over phone for 6–8 weeks. Consecutive sampling was done until data saturation was achieved. Interviews were audio-recorded, transcribed, translated into English, and analyzed thematically with the involvement of all group members.

Results: Data saturation was achieved after interviewing fourteen snakebite victims, and six key themes were identified. First theme revealed that there was a profound trust in allopathic treatment at government hospitals during the acute phase is influenced by the patient's own experience or that of a known person, the role of the circumstances of the snakebite victim and limitations of traditional healing methods in treating emergencies. That was evident by "I was bitten by a snake previously. At that time, I went to the hospital immediately, and they gave me something through the cannula. I was fully recovered after 3 days, and I was discharged. So this time also, I wanted to go to the nearest hospital " (45-year-old cattle farmer). The second theme was insufficiency of emergency transport, unfamiliar environment, and communication barriers lead to delayed hospital arrival. The third one was that they have general satisfaction with the hospital treatment received at the acute stage. The next one was that participants preferred to seek the opinion from native practitioners about treatment for persistent residual complications and psychological reassurance. The fifth theme was that strong family and community support helped to relieve social and economic issues. The final theme revealed that patients had understood that snakebite is inevitable in their livelihood.

Conclusion: In Anuradhapura, farmers initially depend on allopathic treatment for acute snakebite, but later they seek native treatment for minor local effects and psychological support. It will eventually reduce the long-term hospital burden and enhance patient well-being.

Keywords: Allopathic treatment, Patient journey, Snakebite

MED/OP/26

Localized Non-Traumatic Ocular Granuloma in Children: A Clinico-Epidemiological Study in Anuradhapura, Sri Lanka

Kodithuwakku P[1], Weerakoon H[2], Wijayasiriwardana W[3], Asanthi J[3], Widanage GJN[3] Wickramasinghe S[4], Silva A[1], Weerakoon K[1]

[1]*Department of Parasitology, Faculty of Medicine and Allied Sciences, Rajarata university of Sri Lanka*
[2]*Department of Biochemistry, Faculty of Medicine and Allied Sciences, Rajarata university of Sri Lanka*
[3]*Teaching hospital, Anuradhapura, Sri Lanka*
[4]*Department of Parasitology, Faculty of Medicine, University of Peradeniya, Sri Lanka*

Background: Ocular granulomas can result from a variety of infectious or non-infectious causes with a spectrum of ocular pathologies. In pediatric populations, particularly in tropical regions including Sri Lanka, Non-traumatic presumed infectious ocular granulomas have been increasingly reported.

Objective: To describe clinico-epidemiological characteristics related to localized non-traumatic ocular granuloma among Children in Anuradhapura district, Sri Lanka.

Methods: A descriptive cross-sectional study was conducted using an interviewer administered questionnaire and clinical records among children with localized non-traumatic ocular granuloma presenting to ophthalmology clinic, Teaching Hospital, Anuradhapura.

Results: A total of 29 children (mean age of 9.5±2.6 years), between October 2024 and June 2025 were included. The majority (n=19, 65.5%) were boys. All patients presented with episcleral nodule predominantly unilateral (n=27, 93%). Redness (n=27,93%), pain (n=14,48%) and tearing (n=10,34.4%) were the most common associated symptoms. Photophobia (n=4,13.7%), foreign body sensation (n=3,10.3%), itching (n=2,6.8%) and eye discharge (n=1,3.4%) were noted in minority. Four patients (13.7%), had recurrent episcleral nodules, with recurrence intervals ranging from one week up to seven years. All patients reported the regular use (n=24, 82.8%) or history of exposure (n=5,17.2%) to open water sources before developing symptoms. Notably, over 70% (n=21) of these water sources were used by farm animals, mainly cows. Only 4 (13.7%) used traditional medicines (i.e., washing with pomegranate leaf decoction) before visiting the clinic. The initial medical management using eye drops containing corticosteroids, antibiotics, NSAIDs, and lubricants cured 44.8% (n=13) and the nodule was surgically excised in the rest. Histological assessment of excised granuloma revealed mixed inflammatory response.

Conclusion: Clinical manifestations and environmental exposure patterns observed, mostly align with known clinico-epidemiological characteristics of ocular trematode infections; however, the aetiological confirmation requires further exploration with advanced laboratory testing, species confirmation in particular.

Keywords: Clinico-epidemiology, Non-traumatic, Ocular granuloma

MED/OP/27

How Much Do Patients Save? Estimating the Financial Benefits of Home-Based Care by Public Health Nurses in Sri Lanka

Senadheera ASPL[1,2], Gunawardhana DC[3], Gunarathna SP[4], Priyanthi WN[2], Warnasekara YPJN[1]

[1]*Department of Community Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*
[2]*Department of Nursing, Faculty of Health Sciences, The Open University of Sri Lanka*
[3]*Department of Mathematical Sciences, Faculty of Applied Sciences, South Eastern University of Sri Lanka*
[4]*International Vaccine Institute, Seoul, South Korea*

Background: Globally, public health nurses (PHNs) are recognised for their pivotal role in reducing healthcare costs by delivering home-based care. However, evidence on the extent to which Sri Lankan PHNs contribute to patient cost savings through such services remains scarce.

Objective: This study aimed to examine patient cost savings resulting from home-based care provided by PHNs in Rathnapura District, Sri Lanka.

Methods: A descriptive cross-sectional study was conducted among a random sample of patients (>18 years) from 7 PHN areas in Ratnapura District who had received home-based care during December 2024. Data were collected using a pre-tested, interviewer-administered questionnaire and analysed descriptively.

Results: A total of 688 home visits were conducted for 128 patients; 54.7% (n=70) were female, 46.9% (n=60) widowed, 89.1% (n=114) unemployed. The median monthly family income was LKR:38,000.00 (IQR:23,000.00-55,000.00), with 46.9% receiving government subsidies. The most common PHN activities were family counselling (556), wound care (390), measuring blood pressure (180), blood sugar testing (138), urinary catheterisation (134), pain management (62), and NG-tube insertion (35). If PHN services were not available, most patients (n=106, 82.8%) preferred to use public healthcare facilities and had to travel a median distance of 4km (IQR:1.5-12), spending estimated median transport cost per hospital visit of LKR:1,350.00 (IQR:500.00-3,000.00), food cost LKR:500.00 (IQR:0-1,000.00), and salary losses LKR:1,500.00 (IQR:0-3,000.00). Further, the saved total median non-medical cost per patient per visit was LKR:3,500.00 (IQR:1,800.00-7,175.00), per month was LKR:8,000.00 (IQR:3,387.00-27,575.00). The saved total median non-medical cost by a PHN per month was LKR:572,100.00 (IQR:181,800.00-718,200.00). Moreover, only 7.8% (n=10) wished to obtain home-based care from a private practitioner if PHN services were not available. This saved LKR:43,750.00 (IQR:26,000.00-73,750.00) in total median out-of-pocket expenditure per patient per month.

Conclusion: PHNs substantially reduce patients' healthcare costs by delivering home-based services. Expanding coverage and actively promoting PHN services could enhance access and further strengthen community-based care.

Keywords: Home-based Care, Patients' Cost Savings, Public Health Nurse, Sri Lanka

Medicine & Health Sciences

Poster Presentations

MED/PP/01

Prevalence of Overweight and Obesity among Late Adolescents in Jaffna District

Sivakaran M [1], Arasaratnam V[2], Surenthirakumaran R[3]

[1]*Unit of Home Economics, Faculty of Arts, University of Jaffna, Sri Lanka*
[2]*Department of Biochemistry, Faculty of Medicine, University of Jaffna, Sri Lanka*
[3]*Department of Family and Community Medicine, Faculty of Medicine, University of Jaffna, Sri Lanka*

Background: Adolescence is a period of life with specific health and developmental needs. The rising prevalence of overweight and obesity among adolescents poses a significant health risk which leads to early on set non-communicable diseases. Change in dietary habits and reduced physical activity contribute to the prevalence.

Objective: This study aims to assess the overweight and obese status of 736 late adolescents (from 17-19 years) from Jaffna district based on Body Mass Index (BMI) and Waist to Hip Ratio (WHR) to support effective public health interventions.

Methods: Multistage stratified random sampling with probability proportionate to size was used. During household visits, the first household was visited randomly and then every fourth house to the right was visited. In each selected household individuals aged 17-19 were listed and the elder one was selected with the date of birth. After obtaining the written consent, the socio demographic data was selected through an interviewer administrated questionnaire. Weight, height, waist circumference and hip circumference were measured as anthropometric measurements. Ethical clearance was obtained from Ethics Review Committee, Faculty of Medicine, University of Jaffna.

Results: In the study 47.8% (n=352) of participants were males with the mean age of 18.06 (± 0.8) years and 52.2% (n=384) were females with the mean age of 18.07 (± 0.8). The overweight prevalence (BMI 25-29.9) was 9.1% (n=32) in males and 8.9% 9 (n=34) in females, while obesity (BMI >30) affected 2.9% (n=10) males and 3.1% (n=12) females. The central obesity measured by WHR>0.9 was higher in females (17.2%, n=66) compared to males (8.5%, n=30).

Conclusion: The study reveals a notable prevalence of overweight and obesity among adolescents in the Jaffna district. Central obesity is more prominent in females. These findings underscore the emerging risk of nutrition-related health problems in late adolescents and highlight the importance of implementing targeted public health interventions to promote healthy growth and prevent future complications.

Keywords: Adolescents, Jaffna, Obesity

MED/PP/02

Investigating Acute Cytotoxicity of Misused Prescription Drugs in Sri Lanka Using the *Allium cepa* Bioassay: A Study on Tramadol & Pregabalin

Athapaththu AAMK[1], Indudunu GMK[1], Madusanka HGRL[1], Dissanayaka CUS[1], Thiwanka JLPT[1], De Silva ULRM[1], Madhuranga HDT[1,2], Jayamaha AR[2]

[1]*Department of Biomedical Science, Faculty of Health Sciences, KIU, Sri Lanka*
[2]*Research and Innovation Division, KIU, Sri Lanka*

Background: Tramadol and Pregabalin, prescription medications, are widely misused by Sri Lankan drug addicts. This assay was conducted as a preliminary study. The findings from such studies enable the evaluation of the acute toxicity of Pregabalin and Tramadol using animal models.

Objective: This study aimed to determine the acute cytotoxicity of Pregabalin and Tramadol using the *Allium cepa* bioassay.

Method: Tramadol and Pregabalin, commonly misused prescription drugs among drug addicts in Sri Lanka identified through a literature review. Stock solutions (50 mg/50 mL distilled water) were diluted into a two-fold series (2×10^{-3} –1 mg/mL) using pharmacy-grade drugs. Uniform *Allium cepa* bulbs with ~1 cm roots, pre-germinated in dechlorinated water for 48 hours at 27±2°C, were exposed to these concentrations for 96 hours. A 5% DMSO solution served as the positive control, and dechlorinated water as the negative control. Root lengths and morphological abnormalities (e.g., gelling, necrosis, hooks, swelling) were recorded post-exposure. The experiment was triplicated, and data were analyzed using one-way ANOVA with statistical significance set at $p < 0.05$.

Results: Tramadol and Pregabalin exhibited dose-dependent inhibition of *Allium cepa* root growth, with EC_{50} values of 0.48 mg/mL ($R^2 = 0.9934$, $p < 0.0001$) and 1.32 mg/mL ($R^2 = 0.9930$, $p < 0.0001$), respectively. Maximum root lengths were observed at 32×10^{-3} mg/mL for Tramadol (6.13 ± 0.04 cm) and 2×10^{-3} mg/mL for Pregabalin (7.4 ± 0.04 cm), compared to the control 7.2 cm. Morphological abnormalities, notably hook formation, were consistently observed in *Allium cepa* roots treated with drug concentrations (2×10^{-3} mg/mL - 1 mg/mL). Specifically, at certain concentrations within this range, 50% of the roots exhibited hook formation, indicating potential drug-induced cellular stress or toxicity.

Conclusion: Tramadol and Pregabalin cause dose-dependent cytotoxicity and morphological changes in *Allium cepa*, indicating minimal cytotoxic effects. Further in vivo studies are needed to assess their acute toxicity using a compatible animal model.

Keywords: Acute toxicity, *Allium cepa assay,* Pregabalin, Prescription medication, Root growth inhibition, Tramadol

MED/PP/03

Evaluation of Antioxidant Activity of Selected Seaweeds in Southern Province, Sri Lanka

Nanayakkara TT [1], Madurangi HRAT [1], Tennekoon KH [1], Weerasingha WAHY [1], De Silva ULRM [1], Samarakoon DNAW [1]

[1]*Department of Biomedical Science, Faculty of Health Science, KIU campus, Colombo, Sri Lanka*

Background: Seaweeds are marine macro-algae known for their rich content of bioactive compounds, including antioxidants. Although *Ulva lactuca* and *Sargassum filifolium* have been previously studied in Sri Lanka, their antioxidant potential remains underexplored using the specific assay methods employed in this study.

Objective: This study investigates the antioxidant activity of *Ulva lactuca* (green algae) and *Sargassum filifolium* (brown algae) using two complementary assays. DPPH radical scavenging and reducing power (RP) to evaluate the efficacy of different solvent extractions

Methods: The crude extraction from each dried seaweed sample were obtained using sequential cold maceration was performed using hexane, ethyl acetate, and methanol. Extract concentrations ranged from 0.25 mg/ml to 2.0 mg/ml. Absorbance was measured at 517 nm for DPPH and 700 nm for RP assays. Each experiment was conducted in triplicate, and IC_{50} values were calculated using nonlinear regression ($p < 0.05$), with ascorbic acid serving as the reference standard.

Results: In the DPPH assay, *Ulva lactuca* methanol extract (IC_{50} = 0.020 mg/ml) showed the highest radical scavenging activity, followed by *Sargassum filifolium* ethyl acetate extract (IC_{50} = 0.025 mg/ml), both significantly outperforming ascorbic acid (IC_{50} = 6.180 mg/ml). Moderate activity was observed in *Ulva lactuca* hexane (0.704 mg/ml) and ethyl acetate (1.024 mg/ml), and in *Sargassum filifolium* hexane (0.080 mg/ml) and methanol (0.272 mg/ml). In the RP assay, *Ulva lactuca* hexane extract (IC_{50} = 0.221 mg/ml) exhibited the strongest reducing power, followed by *Sargassum filifolium* ethyl acetate (0.293 mg/ml), both superior to ascorbic acid (1.182 mg/ml). Other extracts showed comparable activity: *Ulva lactuca* ethyl acetate (0.474 mg/ml), methanol (0.387 mg/ml); *Sargassum filifolium* hexane (0.507 mg/ml), methanol (0.380 mg/ml).

Conclusion: This study highlights the solvent-dependent extraction of antioxidant compounds, with methanol and ethyl acetate favoring polar bio-actives and hexane retaining non-polar compounds with strong reducing power. The findings underscore the novel antioxidant potential of *Ulva lactuca* and *Sargassum filifolium* from Southern Sri Lanka, supporting their application in different industries.

Keywords: DPPH assay, IC_{50} value, RP assay

MED/PP/04

A Study on the Prediction of Epitope-based Vaccine Candidate with Higher Efficacy for Tetanus Using Immunoinformatic Methods

Pinto MKH[1], Manaram AGI[1], Gayantha RDG[1], Madhumadhawa DMA[1], Sumanathilaka WKD[1], Herath HMRDS[1], Ranadeva NDK[1], Pathiranage S[2]

[1]*Department of Biomedical Science, Faculty of Health Sciences, KIU, Battaramulla, Sri Lanka*
[2]*Research Institute for Farm Animal Biology (FBN), 18196 Dummerstorf, Germany*

Background: Tetanus is an acute, life-threatening disease caused by the neurotoxin of *Clostridium tetani*. Despite existing vaccines, it remains a global health concern due to limitations such as adverse effects and the need for repeated boosters. With precision medicine advancing, epitope-based vaccines represent the next generation of safer, more stable, and targeted immunization. This study applied immunoinformatic methods to identify potential epitope-based vaccine candidates against tetanus toxoid.

Objective: To predict the epitope-based vaccine candidates with higher efficacy for tetanus using immunoinformatic methods.

Methods: The tetanus toxin protein sequence (P04958), comprising 1315 amino acids, was retrieved from the UniProt database. B-cell and T-cell epitopes were predicted using IEDB analysis tools. Epitopes were screened for antigenicity, allergenicity, toxicity and solubility. Selected epitopes were evaluated for HLA binding affinity using IEDB MHC binding tool and conservancy among homologous proteins to further scrutinize the finalized epitopes. The top shortlisted epitopes were structurally modelled using Swiss-Model and PSIPRED. The predicted protein construct was further validated by molecular docking with TLR and *in silico* cloning to simulate its expression in host systems.

Results: The final vaccine construct consisted with 19 B-cell and 19 T-cell epitopes with higher antigenicity and solubility and without allergenicity or toxicity. These predicted epitopes showed higher conservancy among selected homologous proteins with 100% identity. Further, these epitopes were high-affinity binders to selected HLA alleles with IC50 < 50 nM. Protein docking revealed strong interactions with their receptors. With TLR4, an optimal docking score of -231.23 was obtained. *In silico* cloning confirmed the construct's expression potential in host systems.

Conclusion: These findings suggest that the identified epitopes hold strong immunogenic potential for developing safer, targeted epitope-based tetanus vaccines than traditional vaccines. The study supports the application of *in silico* tools in vaccine design, warranting further experimental validation.

Keywords: Epitope-based vaccine, Immunoinformatic methods, Tetanus

MED/PP/05

Screening for Multi-Drug Resistant Bacterial Colonization among Inward Patients at Anuradhapura Teaching Hospital

Rathnayaka MBKP[1], Ranaweera HMDD[1], Rashmini ADO[1], Rathnappriya IMCL[1], Ratnayake RMCB[1], Reema MAF[1], Senanayake H[2], Adhikari C[3], Jayaweera JAAS[3]

[1]*Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*
[2]*Department of Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*
[3]*Department of Microbiology, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*

Background: Multi-drug-resistant bacteria, including Methicillin-resistant *Staphylococcus aureus* (MRSA) and Vancomycin-resistant Enterococcus (VRE), pose a significant threat to hospitalized patients and are currently considered major superbugs worldwide.

Objective: This study investigated the MRSA and VRE colonization patterns and associated risk factors among inpatients (n = 25) at the medical wards of professorial unit, Teaching Hospital Anuradhapura.

Methods: Nasal and axillary swabs (n=25) were collected for MRSA screening, and rectal swabs (n=25) were collected for VRE screening, alongside a questionnaire. *S. aureus* was identified using mannitol salt agar, Gram stain, catalase, and coagulase tests. The cefoxitin breakpoint was determined by the disc diffusion method. *Enterococcus* spp. were identified using blood and MacConkey agars, a Gram stain, catalase, bile esculin, and 6.5% NaCl tolerance. Vancomycin susceptibility was determined by the John Stock method. Data were expressed in percentages.

Results: From nasal swabs, two *S. aureus* (8%) were isolated, and one was methicillin-susceptible SA (4%), while the other was MRSA (4%). The MRSA was sensitive to gentamicin, linezolid, teicoplanin, and vancomycin but resistant to ciprofloxacin. The MSSA was sensitive to ciprofloxacin, ceftriaxone, vancomycin and teicoplanin but resistant to gentamicin. One VRE was isolated (4%) from rectal swabs, which was resistant to teicoplanin, vancomycin, ampicillin and ciprofloxacin. All patients colonized with MSSA, MRSA and VRE had prior hospitalization within 6 months, and reported inappropriate antibiotic use based on the questionnaire. However, due to the low positivity, none of the risk factors were statistically significant ($P > 0.05$).

Conclusion: MRSA, MSSA and VRE colonization among study participants were detected in low percentages. However, assessing the correlation between risk factors and superbug colonization required a large sample size. This study is limited by the use of phenotypic methods and small sample size.

Keywords: MRSA, MSSA, VRE, Inward patients, Teaching hospital Anuradhapura

MED/PP/06

Challenges Faced by Adolescents and Lung Function Technicians During Spirometry: A Qualitative Study

Jinendradasa SNO[1], Nayakarathne NMDGB[1], Perera NADS[1], Chandrasiri WAPN[1], Ananda SDWK[1], Nuwangi H[2], Rajapakse RMSI[3,4]

[1]*Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*
[2]*Center for Health Services Studies, University of Kent, Giles Ln, Canterbury CT2 7NZ*
[3]*Department of Physiology, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*
[4]*Department of Public Health & AI, Graduate School of Cancer Science and Policy, National Cancer Center, South Korea*

Background: Spirometry is the gold standard test to diagnose airway diseases. Challenges in conducting lung function testing on adolescents are poorly understood.

Objective: To assess the challenges and obstacles faced by lung function technicians when conducting lung function assessments in adolescents.

Methods: This qualitative study was conducted on adolescents aged 13-14 from Anuradhapura with severe asthma during their asymptomatic period and three lung function technicians with adequate knowledge but no prior experience performing spirometry in adolescents. Severe asthma was defined according to the International Study of Asthma and Allergy in Childhood criteria, and participants were randomly selected after excluding those with contraindications. Spirometry was performed according to standard American Thoracic Society/ European Respiratory Society guidelines. Lung function technicians gave verbal instructions, demonstrated breathing manoeuvres, used incentives, and executed breathing manoeuvres with the adolescents for training. Two investigators observed each participant during spirometry, taking independent field notes based on the reactions, interactions, and behaviours. In-depth semi-structured interviews were conducted with each participant and technician following the tests. Thematic analysis was used.

Results: Data saturation was achieved with 15 adolescents (7 male, 8 female). The qualitative data were analysed under three major themes: comprehending instructions, executing breathing manoeuvres, and perspectives. All participants reported comprehending instructions clearly although the technical performance varied. Synchronizing breathing manoeuvres with adolescents achieved optimal performance, although it was exhausting for the technicians. The most challenging aspect was obtaining accurate readings in forced spirometry, particularly the forceful exhalation in the first second and maintaining it for over 6-seconds. None of the parents or adolescents had prior knowledge of lung function tests, leading to apprehension before the procedure. Once the adolescents understood the process, they were cooperative.

Conclusion: Demonstrations and synchronized breathing manoeuvres for training, in addition to instructions, improve the overall quality of test performance.

Keywords: Spirometry, Adolescents, Qualitative study

MED/PP/07

Popularity and Perception towards Beverages for Weight Loss as a Weight-Losing Method in the Lifestyle of Medical Undergraduates, Rajarata University of Sri Lanka

Wijesooriya A[1], Wijerathna IHTN[2], Wijerathna PGKIS[2], Wijerathne SS[2], Wijesinghe DDGM[2], Wijewardena PIU[2], Bandara PRSRJ[3]

[1]*Department Psychiatry, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*
[2]*Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*
[3]*Department of Biochemistry, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*

Background: With the increasing obesity prevalence, practical weight loss methods requiring minimal lifestyle changes are needed. Various beverages have been reported to aid weight loss.

Objective: To assess the popularity and perception of weight-loss beverages among medical undergraduates

Methods: A cross-sectional study was conducted using a self-administered questionnaire to assess the popularity and perception of 11 beverages following PUBMED and Google Scholar search on 'weight loss' and 'beverages' with documented weight losing effects. A total of 490 medical undergraduates were recruited through self-selection sampling. BMI of the participants were self-calculated. Data were analyzed using Chi-Square tests.

Results: Among 490 respondents (26.5% male; Female: 73.5%), 57.9% expressed concern about losing weight, significantly associated with BMI ($p<0.001$). 6.9% (n=34) participants claimed to use weight loss beverages and it was higher among female students (73.5%, n=25) and those with greater weight loss concern ($p=0.008$) but did not significantly associate with BMI ($p=0.155$). The number of weight losing methods used by a single person is higher in females than males ($p=0.006$). Awareness of the number of weight-loss beverages among the 11 beverages selected positively correlated with the number of beverages used ($r=0.407$; $p=0.017$). Participants used from 1 to 11 of the beverages (mean = 2.07, SD = 2.68), influenced by advertisements (28.0%, n=284), availability (20.3%, n=206), experience (19.4%, n=197), recommendations (19.3%, n=196), cost (8.8%, n=89) and prescriptions (4.0%, n=41). The most popular beverages were green tea (46.5%, n=228), water (35.3%, n=173) and lime juice (29.0%, n=142) selected mainly due to advertisements and availability. Notably, water (64.7%, n=317) and black tea (87.3%, n=428) are not consumed for weight loss purposes.

Conclusion: Weight-loss beverages predominantly used by female medical undergraduates, influenced by awareness, availability and advertising. Advertising increases the awareness of types and effects of weight-loss beverages.Though water and black tea are feasible and inexpensive they aren't widely used for weight loss.

Keywords: Beverages, Weight-loss, Medical undergraduates

MED/PP/08

Connections Built between Human and Nature Through Adjuvant Music Therapy During Cancer Chemotherapy as a Bio-Psycho-Social Approach.

Gajamanne U[1], Ramesh B[2], Sobana R[3], Karthikeyan K[4]

[1]*Independant researcher and Music Therapy practitioner, Sri Lanka*
[2,3]*School of Music Therapy, Institute of Salutogenesis and Complementary Medicine, Sri Balaji Vidyapeeth, India*
[4]*Department of Medical Oncology, Mahatma Gandhi Medical College and Research Institute, Sri Balaji Vidyapeeth, India*

Background: Cancer, the second leading cause of global mortality, brings multiple physical, psychological, social, and emotional challenges. Alongside conventional care, Music Therapy (MT) is increasingly recognized as an effective complementary and integrative approach. This paper discusses the effectiveness of MT as a bio-psycho-social intervention, highlighting its role in strengthening human–nature connections and overall wellbeing during chemotherapy.

Objectives: The study aims to evaluate the effect of MT on physical, psychological, and functional impairments, and Overall Valuation of Life (OVL), and to explore how MT fosters connections with nature, self, and others through qualitative outcomes.

Methods: The Randomized Controlled Trial had a cohort of 42 participants, assigned into Adjuvant Music Therapy (AMT) and Standard Medical Management (SMM) groups. The AMT group (n=22) received four 45-minute MT sessions across three months. The Rotterdam Symptom Checklist (RSCL) was administered at the baseline and post-intervention. Cooperation during chemotherapy was rated on a 5-point Likert scale. Semi-structured interviews with patients, caregivers, and clinicians underwent thematic analysis.

Results: Compared with SMM, the AMT group showed reduction in the degree of physical impairments, significant reductions in psychological impairment (p=0.001), reduced degree of functional impairments, and improved OVL (p=0.01). Cooperation during chemotherapy improved significantly (p=0.001). Thematic analysis yielded five recurring themes: connection to nature, spiritual coping, altered perception of life, family relationships, and resilience during challenges. Stakeholders encouraged the use of MT highlighting its role in strengthening therapeutic bonds, compliance towards treatment, promoting emotional regulation, improving overall patient-wellbeing and improving the hospital atmosphere.

Conclusion: Adjuvant MT enhanced patient wellbeing by reducing psychological and physical symptoms and enhancing overall Quality of Life. Importantly, it nurtured human–nature connections and spiritual coping, helping patients reframe life perceptions and strengthen relationships. These outcomes support MT as a bio-psycho-socio-spiritual intervention that bridges human experience with nature, advancing holistic cancer care.

Keywords: Music Therapy, Bio-psycho-socio-spiritual approach**,** Chemotherapy, Holistic cancer care

MED/PP/09

Enhance AI-Based Parameter Analysis for Prediction of Heart Attack

Fernando KMHD[1], Lakmali HWN[1], Upamalika RKI[1], Sooriyaarachchi PMHM[1], Priyashantha ALU[1], Jayawardhana SMMS[1]

[1]*Department of Information Communication Technology, Faculty of Technology, Rajarata University of Sri Lanka*

Background: One of the main causes of mortality worldwide is heart attacks, and early identification is essential. To enhance prediction, this study combines clinical, lifestyle, and demographic data with AI, particularly machine learning, as traditional diagnostics sometimes overlook early indicators.

Objective: To compares XGBoost, Random Forest, and Logistic Regression for heart attack prediction, aiming to optimize performance, identify key risk factors, and propose an AI-based detection framework.

Methods: Using a Kaggle dataset of 8,763 patient records with 27 clinical, lifestyle, and demographic characteristics, the study applied supervised machine learning for predictive analytics using Google Colab. Python was used for data preparation, which included managing missing values, encoding, and scaling. After dividing the dataset into training (80%) and testing (20%), the models were assessed using the confusion matrix, F1-score, accuracy, precision, and recall. This strategy is warranted since the dataset is sizable and includes important heart attack risk variables, allowing for accurate prediction modeling.

Results: The investigation analyzed 8,763. Important risk factors were smoking (89.7%), family history (49.3%), diabetes (65.2%), obesity (50.1%), and prior heart issues (49.6%). Machine learning models Random Forest (63%), XGBoost (62%), SVM (58%), and Logistic Regression (56%) demonstrated moderate accuracy, despite the fact that 35.8% were at risk of a heart attack. The results show that more clinical variables and better feature engineering are needed, even if ensemble models performed better.

Conclusion: The study demonstrates how ML, particularly XGBoost, may be used to predict the likelihood of a heart attack based on clinical and lifestyle data.

Keywords: Artificial Intelligence, Heart Attack, Machine Learning

MED/PP/10

Quality of Life of Patients Awaiting Percutaneous Nephrolithotomy (PCNL) in the Teaching Hospital, Anuradhapura

Seneviratne AMDS[1], Sewwandi ADS[1], Sewwandi DHBTA[1], Sewwandi JHD[1], Shakkir MFM[1], Shakya MPA[1], Paththinige CS[1]

[1]*Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*

Background: Kidney stone disease is a prevalent urological problem that significantly impacts patients' daily lives. While percutaneous nephrolithotomy (PCNL) is a key management strategy, the quality of life (QoL) of patients awaiting this procedure in Sri Lanka has not been explored.

Objective: To evaluate the QoL and its determinants among patients awaiting PCNL in Teaching Hospital-Anuradhapura (THA).

Methods: A descriptive cross-sectional study was conducted among patients attending Urology Clinic, THA. QoL was assessed using SF-36 questionnaire, alongside demographic and clinical data. Data were analyzed employing descriptive statistics, Pearson correlation, independent samples t-test, and one-way ANOVA. Ethics Review Committee, Faculty of Medicine and Allied Sciences, Rajarata University approved the study.

Results: Study included 216 patients aged 18-79 years (Mean 52.7). Majority (65.3%) were males. Among them, 39.4% and 38.4% had symptoms for 1-2 and 2-5 years respectively. Sixty-four (29.6%) had undergone stenting. Mean scores in eight QoL domains varied with the lowest (25.23) for 'role limitation due to emotional problems (RL-EP)' and highest (58.54) for 'role limitation due to physical health (RL-PH)'. Significant weak, negative correlation was observed between patient's age and the 'physical functioning (PF)' score ($r=-0.154$, $p<0.05$). 'Social functioning (SF)' score differed significantly across income levels ($p<0.01$), with higher score in higher income categories. Longer symptom duration was significantly associated with reduced QoL in PF, RL-PH, SF, 'pain' and 'emotional wellbeing (EW)' domains ($p<0.05$). Longer waiting time for PCNL significantly impacted RL-PH, SF, and 'pain' scores ($P<0.05$). The EW score was significantly lower among patient with multiple calculi. Patient with stents reported a significantly higher scores in RL-PH and RL-EP ($p<0.05$).

Conclusion: The findings indicated a negative impact of kidney stones on multiple domains of QoL, influenced by varied demographic, disease-related and healthcare-related factors. This underscores the need for timely intervention and holistic patient care strategies for a better QoL for these patients.

Keywords: Kidney Stones, Quality of Life, SF-36

MED/PP/11

Health Status and Occupational Risks among Sri Lankan Migrant Workers: A Cross-Sectional Study

Dayaratne HK[1], Dayawansha KMNR[1], De Alwis KKJT[1], De Silva AHVD[1], De Silva MBDS[1], De Silva WPP[1], Warnasekara YPJN[2]

[1]*Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*
[2]*Department of Community Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*

Background: The migration of Sri Lankan workers abroad has increased, exposing them to occupational hazards, chronic diseases, and psychosocial stress.

Objectives: This study aimed to (i) describe the health status—defined as self-reported chronic diseases, musculoskeletal complaints, and occupational injuries—and psychosocial well-being, assessed through perceived stress, of Sri Lankan migrant workers, and (ii) identify areas for improvement in healthcare support systems.

Methods: A cross-sectional descriptive study was conducted using a self-administered online questionnaire. Participants were categorized as professional, skilled, or non-skilled. Data on demographics, chronic diseases, injuries, harmful behaviours, and awareness of Sri Lankan government healthcare services were collected. Psychosocial well-being was measured using the Perceived Stress Scale (PSS; 0–40, higher = greater stress), and physical health by a self-rated score (1–5, higher = better health). Together, these represented health and well-being. The minimum sample size was achieved.

Results: A total of 1,209 participants (mean age 34–37y; 42.6% female) responded; 80.5% had worked abroad >6 months. Common complaints included joint pain (61.3%), back pain (56.7%), and fatigue (45.0%), often interfering with job performance. Non-skilled workers reported more injuries: slipping (32.8%), cuts/lacerations (26.5%), and burns (14.7%). Chronic conditions included hypertension, diabetes, and asthma (12–20%). Harmful behaviours were frequent, with smoking (27.5%) and alcohol use (42.1%) highest among skilled workers. As data were self-reported, the timing of onset could not be determined. Mean stress scores were 16–17, higher in females. Regression showed female gender (β=1.46, $p<0.001$) and poorer physical health (β= −1.24, $p<0.001$) independently predicted stress. Alcohol use showed inconsistent associations, suggesting confounding. Awareness of government healthcare services was limited (~36–41% had never heard of them), and satisfaction was low to moderate.

Conclusion: Sri Lankan migrant workers face a substantial burden of musculoskeletal complaints, injuries, chronic conditions, harmful behaviours, and stress. Limited awareness and low utilization of healthcare services highlight the need for preventive occupational health programs, improved access to support, and targeted mental health interventions. Future longitudinal studies are required to clarify whether chronic conditions and behaviours are pre-existing or migration-related.

Keywords: Sri Lankan migrant workers, Occupational health, Chronic diseases, Psychosocial well-being

MED/PP/12

Expectations, Challenges, Misconceptions, and Satisfaction among Patients Attending Radiological Investigations in Teaching Hospital Anuradhapura

Balapitiya CN[1], Arshad JMM[1], Aththanagoda ARTD[1], Aththanayake AMDB[1], Bandara DBIWCC[1], Gunasekara SD[2], Warnasekara J[2], Koralegedara KIS[3]

[1]*Faculty of Medicine and Allied Sciences, Rajarata University Sri Lanka*
[2]*Department of Community Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*
[3]*Department of Anatomy, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka*

Background: Understanding patients' perspectives and experiences on radiological investigations is essential to enhance patient-centered care, as the challenges they face can affect satisfaction and trust in radiology services.

Objectives: The objective of the study was to explore patients' expectations, challenges, misconceptions and satisfaction regarding radiological procedures in a tertiary healthcare facility.

Methods: We conducted a qualitative study at the Teaching Hospital Anuradhapura, employing in-depth interviews with purposively selected patients attending the radiology clinic, along with two weeks of participant observation. Data were collected using interview guides. Observational data were collected through informal conversations and corresponding field note documentation. Data were analyzed using thematic analysis.

Result: We conducted in-depth interviews with 25 purposively selected patients aged over 18 years attending the radiology clinic, alongside two weeks of participant observation. Five themes were generated: 1) Knowledge of the patients 2) Burdens faced by patients 3) Misconceptions among patients 4) Satisfaction level of patients 5) Patients' expectations regarding radiological procedures. We found that many patients lack adequate knowledge about the purpose, preparation, and process of radiological investigations. Lengthy waiting time is a huge burden to the patients. Misconceptions about radiation exposure and safety measures contributed to unnecessary fear and reluctance. Many patients satisfied with the staff, procedures, facilities and services while others expect more efficient and organized services at the radiology unit.

Conclusion: Our study highlights the necessity of improving effective staff-patient communication to reduce unnecessary worries and misconceptions related to radiological investigations. Furthermore, efficient service provision, enhancing facilities and accessibility to these healthcare services may improve overall patient experience and satisfaction.

Keywords: Patient satisfaction, Qualitative study, Patient challenges

MED/PP/13

Role of Social Influences in COVID-19 Vaccination and Future Vaccine Hesitancy: A Qualitative Study from Rural Anuradhapura, Sri Lanka

Nawarathna NPCG[1], Nawagamuwa CP[1], Nawarathna WDK[1], Nawarathna WSPS[1], Nayakarathne NMDGB[1], Gunasekara SD[2], Warnasekara YPJN[2]

[1]Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka
[2]Department of Community Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka

Background: Vaccine hesitancy is a considerable public health problem, even among the vaccinated population. Community misconceptions, shared beliefs, and social influences strongly shape vaccine related perceptions. Understanding and addressing these factors is essential to prevent outbreaks and protect herd immunity.

Objectives: To explore the influence of social networks and sociocultural context in shaping COVID-19 vaccination in rural Anuradhapura, Sri Lanka.

Method: We conducted a qualitative study, using in-depth interviews with purposively selected community members in a selected divisional secretariat area in Anuradhapura, who reported complications following COVID-19 vaccination. Data was analyzed thematically.

Results: We conducted fifteen interviews with 5 males and 10 females aged 24-64. The factors contributing to vaccine hesitancy extend beyond the individual level. Social influence was a considerable factor affecting vaccine hesitancy, with four key themes emerging. Family and peer influence, trust in authorities, cultural and religious factors, and the impact of informational systems. Attitudes of family members, neighbours and peers had a marked effect on an individual's decision to accept or refuse vaccines. People often looked to their family or peers for cues on what behaviours were socially acceptable. Confidence and trust in health care providers, government and scientific authorities had a considerable role in vaccine acceptance, while mistrust in these authorities led to refusal. The influence of community or religious leaders and social norms had the potential to shape group attitudes toward vaccination, either positively or negatively. Information networks, including traditional and social media contributed. Spreading misinformation and conspiracy theories about vaccines, affecting public perceptions.

Conclusion: Vaccine hesitancy is not merely an individual decision but a socially influenced phenomenon shaped by community dynamics and information environments. Understanding how trust, social networks, cultural influences, and information flow shape these decisions is crucial for guiding context-specific strategies to improve vaccine acceptance.

Keywords: COVID-19, Social influence, Vaccine hesitancy

MED/PP/14

Improving Decision-Making Skills in Early Adolescents: A Quasi-Experimental Study in the Anuradhapura District

Jayasekara EKPI [1], Chandrarathne N [2] and Fernando WMS [1]

[1]*Department of Health Promotion, Faculty of Applied Sciences, Rajarata University of Sri Lanka*
[2]*Department of Community Medicine, Faculty of Medicine, University of Colombo*

Background: Decision making skills are crucial for optimal adolescent development. Early adolescence is also a period of significant biological and cognitive development. There is a gap in research on improving decision making among adolescent skills in Sri Lanka.

Objective: This study aimed to assess the effectiveness of a health promotion intervention in improving decision making skills among school adolescents in the Anuradhapura district.

Methods: A quasi-experimental study was conducted among grade nine students in two selected schools, selecting as the intervention group (IG) and control group (CG) with fifty students in each group recruited through convenience sampling. The IG received a four-month health promotion intervention delivered through participatory methods, including engaging discussions, role-playing scenarios and interactive group activities. The focus was primarily on these four criteria: not afraid to voice opinions, decisions not influenced by peers (e.g., substance use, love affairs, subject selections), concern about how others perceive them and prioritizing personal values. Data collection consisted of a pre- and post-assessment using a self-administered Likert-scale questionnaire for both groups and post-intervention focus group discussions (FGDs) and key informant interviews (KIIs) with the IG. Quantitative data were analyzed using descriptive and inferential statistics, while qualitative data were examined using framework analysis with a deductive approach.

Results: No significant differences were observed in the baseline socio-demographic factors between the IG and CG. The change of mean scores indicates a significant improvement in; not afraid to voice opinions (IG=1.3400, CG=0.2200, $p<0.001$), decisions not influenced by peers (IG=0.7800, CG=-0.2600, $p<0.001$), concern about how others perceive them (IG=1.0600, CG=0.2000, $p<0.001$), prioritizing personal values (IG=0.8800, CG=-0.1000, $p<0.001$) and total decision-making skills (IG=4.0600, CG=0.0600, $p<0.001$).Qualitative feedback aligned with the quantitative findings, confirming improvements in decision-making skills.

Conclusion: This study concludes that the health promotion intervention is effective in improving the decision-making skills among school adolescents.

Keywords: Adolescents, Decision making, Health Promotion, School

MED/PP/15

Clinical Profile and Complication Spectrum of Chronic Liver Cell Disease (CLCD) in Anuradhapura, Sri Lanka: Insights from a Hospital-Based CLCD Registry

Premawardana NP[1], De Silva GCV[1], Senadhira SDN[1], Warnasekara J[2], Umayanga HD[1], Fonseka HAN[1], Karunarathne YD[1], Karawita SS[1]

[1]*Teaching Hospital Anuradhapura.*
[2]*Department of Community Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka.*

Background: The Anuradhapura District is a rural district located in the North Central Province. Clinicians experience high disease burden of CLCD and its complications. However, there remains a paucity of comprehensive, region-specific data.

Objectives: A CLCD patient registry has been established at Teaching Hospital Anuradhapura (THA) to characterize the clinical profile and complication burden of patients with chronic liver disease, with particular emphasis on hepatic decompensation and readmission patterns.

Methods: This study utilizes both prospective and retrospective cohort designs. It includes newly and previously diagnosed CLCD patients admitted to the medical wards and followed up at the medical and gastroenterology clinics of THA.

Results: From April 2024 to May 2025, a total of 272 patients were evaluated. The majority were male (n = 198; 72.8%). Ninety-two patients (33.8%) were over 65 years of age. Clinical features of hepatic decompensation were present in 208 patients (76.4%). Ultrasound evidence of portal hypertension was observed in 196 patients (72%). A total of 192 patients (70.6%) had experienced two or more hospital admissions following their initial diagnosis. Hepatic encephalopathy (HE) was documented at the time of admission in 29 patients (10.7%), while 56 patients (20.6%) developed encephalopathy at some stage during their illness. At least one episode of hematemesis or evidence of upper gastrointestinal bleeding was noted in 97 patients (35.7%). Fifty-seven patients (20.9%) had at least one episode of spontaneous bacterial peritonitis.

Conclusions: Patients with cirrhosis experienced frequent complications such as portal hypertension, encephalopathy, bleeding, and infection. The high prevalence of decompensation and repeated hospitalizations in this cohort underscores the need for improved surveillance, early intervention, and comprehensive management of CLCD to reduce morbidity and healthcare impact.

Keywords: Chronic Liver Cell Disease, Hepatic Decompensation, Portal Hypertension

Social Sciences & Humanities

Oral Presentations

SSH/OP/01

Exploring Teacher and Student Perceptions of Teacher-Student Rapport and its Role in Effective Pedagogical Practices at the Junior Secondary Level in the Kandy District.

Illangasingha IPD[1]

[1]*Department of Education, Faculty of Arts, University of Peradeniya*

Background: The quality of the teacher-student relationship is a critical determinant of educational success, particularly at the junior secondary level. In the Sri Lankan context, challenges such as student disengagement, low motivation, and poor academic performance are often linked to communication gaps between teachers and students. This study was conducted to address the need to understand how these interpersonal dynamics specifically influence student outcomes within schools in the Kandy District.

Objective: The primary objective was to examine the impact of positive teacher-student relationships on the academic achievement, classroom participation, and behaviour of junior secondary students. A secondary objective was to identify the specific communication strategies used by teachers that foster a supportive and effective learning environment.

Methods: A mixed-method study design was employed. The study was set in five selected junior secondary schools in the Kandy District. The study sample consisted of 50 teachers and 50 students, selected through purposive sampling. Data collection tools included semi-structured interviews, questionnaires, classroom observations, and an analysis of student mark sheets. Qualitative data were analysed using thematic analysis, while quantitative data were analysed using descriptive statistics.

Results: Thematic analysis revealed that students who perceived their relationships with teachers as positive and respectful demonstrated higher levels of classroom participation and improved motivation. Teachers identified as effective utilised strategies such as friendly communication, consistent encouragement, and active listening. Descriptive statistical analysis of mark sheets indicated that students in classrooms with strong reported teacher-student relationships had higher average academic scores compared to their peers.

Conclusion: Positive teacher-student relationships are vital for enhancing the teaching and learning process in junior secondary schools. The study concludes that the intentional use of supportive communication by teachers directly correlates with improved student outcomes. It is recommended that teachers adopt student-centred communication strategies. Furthermore, school administrations should implement professional development programs focused on improving teachers' interpersonal skills to foster more effective classroom environments.

Keywords: Academic achievement, classroom engagement, teacher-student relationship.

SSH/OP/02

Investigating the Role of Task-Based Instruction in Facilitating Learner Autonomy: A Study on the Perceptions of Students at the University of Kelaniya

Wijayarathna KATT[1]

[1]*Department of English Language Teaching, Faculty of Humanities, University of Kelaniya*

Background: In recent years, the emphasis on learner autonomy in language education has gained popularity within universities. As a pedagogical approach, task-based instruction provides meaningful learning to improve their responsibility for their own learning. Although it has become a global interest, limited research has been conducted within the Sri Lankan context, especially regarding undergraduates' perceptions. Therefore, this study investigated the students' perceptions of the role of TBI in promoting learner autonomy.

Objectives: This study aims to investigate the role of task-based instruction in facilitating learner autonomy, as it could be beneficial for both language teachers and learners.

Methodology: This paper reports on a qualitative study examining the effect of task-based instruction to facilitate learner autonomy. The sample consists of six undergraduate students teaching English as a second language, selected using the purposive sampling method. Although the sample is limited, it provides an in-depth exploration of individual experiences. Data was collected through semi-structured interviews, each lasting approximately 30 minutes. The interviews were transcribed and analysed using thematic analysis.

Results: Participants often described that the use of task-based instruction supports the enhancement of their autonomy. In their learning process, they recognise TBI as an engaging and instructional method because they identify the benefits of using TBI to enhance their learning. Considering their perceptions, the following themes are identified: "collaborative learning", "increased motivation", and "implementations of TBI". One student reported that "working in groups supported me to determine independently, while sharing ideas". Moreover, as indicated in the responses to the last question in the interview, some implementations are also suggested.

Conclusion: The study concludes that task-based instruction positively contributes to facilitating learner autonomy among TESL undergraduates. Further, it is reported that more structured task-based instruction should be recommended to foster learner autonomy.

Keywords: learner autonomy, perceptions, task-based instruction, undergraduates

SSH/OP/03

The Study Based on the Impact of School-Based Counselling Interventions on Reducing Examination-Related Stress among G.C.E. Ordinary Level Students in the Gampola Education Zone, Sri Lanka

Imesha KS[1], Gajan R[1]

[1]*The Department of Educational Leadership and Management, Faculty of Education, The Open University of Sri Lanka*

Background: Examination-related stress among secondary school students is a growing concern in Sri Lanka, particularly among those preparing for the General Certificate of Education Ordinary Level (G.C.E. O/L) examinations. The pressure to perform well academically can lead to increased anxiety, negatively affecting students' mental health and academic performance. In response, many schools have introduced school-based counselling interventions aimed at mitigating this stress.

Objective: This study investigates the impact of such counselling services on reducing examination-related stress among G.C.E. O/L students in the Gampola Education Zone, Sri Lanka.

Methods: A mixed-methods approach was applied to gain a comprehensive understanding of the effectiveness of these interventions. Quantitative data were collected through structured questionnaires that measured stress levels before and after counselling sessions, while qualitative data were gathered through group discussions with students and interviews with school counsellors.

Results: The sample consisted of 60 G.C.E. O/L students from five government schools within the Gampola Education Zone, selected through a random sampling method to guarantee representation across different socioeconomic backgrounds. Quantitative data and qualitative data were analysed using simple statistical methods and thematic analysis, respectively. Findings indicate that school-based counselling significantly reduces examination-related stress, improving students' mental health and emotional well-being. Students reported increased confidence and better time management following counselling interventions. Additionally, counsellors mentioned the importance of individualised support and stress management workshops. However, the study also identified challenges such as limited resources and a lack of awareness among students about counselling services.

Conclusion: Based on these findings, it is recommended that the Ministry of Education invest in expanding counselling programs, including training more counsellors and promoting awareness campaigns to encourage student participation. Improving school counselling infrastructure could play a crucial role in supporting students' mental health and academic success during critical examinations.

Keywords: Examination-related stress, G.C.E. Ordinary Level, Mental health, School counselling and Student well-being.

SSH/OP/04

Exploring GCE O/L Students' Awareness of A/L Subject Selection in Sri Lanka's Plantation Schools

Sriganth R[1]
[1]*Department of Education, Faculty of Arts, University of Peradeniya, Sri Lanka*

Background: The transition from the General Certificate of Education Ordinary Level (GCE O/L) to the Advanced Level (A/L) is a pivotal stage in Sri Lanka's education system, shaping students' academic and career pathways. Students in plantation schools often encounter barriers such as limited career guidance, socioeconomic hardship, and language constraints, which contribute to uninformed subject selection and restricted future opportunities.

Objective: This study investigated the awareness of GCE O/L students in plantation schools regarding A/L subject selection and examined the factors influencing their decision-making.

Methods: A descriptive quantitative survey was conducted among 65 GCE O/L students from plantation schools in the Badulla District, selected using convenience sampling. Data were collected through a structured questionnaire administered via Google Forms, focusing on students' awareness of A/L subject streams, readiness for selection, access to career guidance, and socioeconomic influences. Descriptive statistics, including frequencies and percentages, were analysed using SPSS (21) software.

Results: The findings revealed low awareness of A/L subject streams and their career implications. A total of 56.9% of students disagreed or strongly disagreed that they understood the subjects available in each stream, while 50.7% were unaware of subject requirements for desired careers. Only 24.6% expressed confidence in choosing appropriate subjects, and 60.0% reported insufficient school-based support. Parents (76.9%) and teachers (66.2%) emerged as the primary sources of guidance, though 9.2% of students reported receiving no support. While 56.9% aspired to pursue university education, 46.2% expressed doubts about their families' financial capacity to support further studies.

Conclusion: The study highlights substantial gaps in awareness and preparedness for A/L subject selection among students in the plantation sector. Strengthening school-based career counselling, mentorship initiatives, and access to reliable information is essential to empower marginalised students, promote informed decision-making, and ensure educational equity.

Keywords: students' awareness, career Guidance, plantation Schools

SSH/OP/05

Challenges of Sustainable Paddy Cultivation in Sri Lanka: A Special Reference to the Matara District.

Pavithrani HDMT[1]

[1] *Assistant Lecturer, Department of Geography, Faculty of Social Sciences, University of Kelaniya*

Background: Agriculture is a vital component of Sri Lanka's economy, with paddy cultivation playing a particularly significant role. Sustainable paddy cultivation, which balances productivity with environmental conservation, is essential for ensuring long-term food security and rural resilience.

Objective: This study aims to investigate the challenges associated with sustainable paddy cultivation in Sri Lanka. Specific objectives include assessing farmers' awareness of sustainable practices, identifying socioeconomic and environmental challenges affecting adoption, and suggesting measures to enhance Sustainability.

Methods: To achieve these objectives, a questionnaire survey was conducted across 10 selected Grama Niladhari Divisions (GNDs), covering 60 households. A 5% sample of paddy-farming families in each GND was selected using simple random sampling. Both primary and secondary data were utilised, with questionnaires as the main tool, supplemented by unstructured interviews and field observations. Data were analysed using Microsoft Excel.

Results: The findings reveal significant gaps in farmers' awareness and implementation of sustainable practices. Only 17% of respondents demonstrated awareness of sustainable paddy cultivation, highlighting a major knowledge gap. Socioeconomic challenges included lower profitability compared to traditional methods, limited adoption of sustainable practices by small landholders, and labour shortages for eco-friendly activities. Environmental challenges, identified by over 40% of respondents, included water scarcity and irregular rainfall due to climate change, soil degradation and salinity, declining soil fertility, and the excessive use of agrochemicals that affect soil and water systems.

Conclusion: To promote sustainable paddy cultivation, strategies such as water-saving methods like Alternate Wetting and Drying (AWD), integrated nutrient management, reduced soil disturbance, use of biochar to improve soil fertility and sequester carbon, and the development of climate-resilient high-yield rice varieties are recommended. Training programs and increased investment in research are also vital to strengthening adoption. The study provides valuable insights into socioeconomic and environmental constraints of sustainable paddy cultivation, emphasising its importance for food security, rural livelihoods, and national development goals.

Keywords: Environmental Challenges, Paddy Cultivation, Rural Livelihoods, Sustainability

SSH/OP/06

Assessment of Canal-Borne Pollution and Water Quality Degradation in Mihintale Tank.

Jayawickrama GGH[1], Piyasena C[2]

[1]*Department of Environmental Management, Faculty of Social Science and Humanities, Rajarata University of Sri Lanka*
[2] *Faculty of Humanities and Social Science, Open University of Sri Lanka*

Background: The Mihintale Tank, located in Sri Lanka's Dry Zone, is an agriculturally and environmentally significant reservoir that is currently experiencing severe water quality degradation due to the discharge of untreated effluents and solid waste. Four major waste input canals—originating from the southeast (town area), southwest (university hostels), west, and north (both from the university's main campus)—directly discharge into the tank.

Objective: This study aimed to evaluate water and soil quality at the points where these canals enter the reservoir, to inform appropriate environmental management interventions.

Methods: Water and soil samples were collected from each of the four inlet sites. Water samples were analysed for pH, biochemical oxygen demand (BOD), chemical oxygen demand (COD), electrical conductivity (EC), and dissolved oxygen (DO), while soil samples were assessed for pH, EC, organic matter content, and phosphorus concentration. The results were compared against the World Health Organisation (2022) guidelines for drinking-water quality and the UNEP/FAO wastewater guideline (1992) standards for agricultural water and soil use.

Results: The southwest canal-receiving effluent from the university hostels, exhibited significantly elevated values: BOD (350 mg/L), COD (750 mg/L), and EC (525 µS/cm), all exceeding WHO and FAO thresholds (BOD: 110–350 mg/L; COD: 80–260 mg/L; EC: 400 µS/cm). Soil quality at all sampling points remained within acceptable limits for agricultural use. These findings identify the southwest canal as the principal source of pollution affecting Mihintale Tank, likely due to the discharge of untreated wastewater from the university hostel complex. Water quality parameters from three of the four canals were within the WHO-recommended limits.

Conclusion: Immediate measures are recommended to treat wastewater at its source before discharge, to prevent further ecological degradation of this critical freshwater resource.

Keywords: Mihintale Tank, water pollution, BOD, untreated wastewater, environmental management.

SSH/OP/07

The Study on Challenges Faced by Undergraduate Students in the Hotel Industry Internships

Wickramasinghe WAYG[1]

[1]*Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka*

Background: The hospitality sector is a highly customer-focused industry. As part of the compulsory internship requirements, undergraduates in tourism and hospitality management programs often work as trainees in the hotel industry. Many undergraduates face considerable challenges during their hotel industry internships, which can negatively impact both their learning outcomes and career readiness. Understanding these challenges is crucial for improving internship experiences and strengthening the future workforce in the hotel sector.

Objective: The general objective of this study is to identify the challenges faced by undergraduate students in hotel industry internships. The specific objective is to explore effective strategies to address these challenges.

Methods: This research comprises 20 respondents from Rajarata University, Sabaragamuwa University, and the University of Kelaniya, utilising a qualitative approach to gather and analyse data. Primary data was collected through semi-structured interviews with undergraduates. The secondary data was sourced from academic literature, reports and journal articles.

Results: The study's findings revealed that individual challenges, including communication difficulties, poor work-life balance, health issues, and a lack of confidence, significantly impacted students' internship experiences. Organisational challenges, including insufficient supervision, excessive working hours, an inflexible work environment and a mismatch between academic training and industry expectations, further complicate the internship process.

Conclusion: To address these issues, the study recommends strengthening pre-internship training programs, fostering closer collaboration between universities and the hotel industry, implementing mentoring systems, and creating more supportive and flexible work environments. Establishing organised feedback sessions during internships can help students engage in self-reflection and foster their career development. By adopting these strategies, universities and hotels can enhance the internship experience, better preparing students for their future roles in the dynamic hospitality industry. This study emphasises the importance of addressing these challenges to ensure that internships provide meaningful learning opportunities and contribute to the development of a skilled and resilient workforce.

Keywords: Challenges, Hotel Industry, Internships, Undergraduate students

SSH/OP/08

Exploring the Challenges of Adopting Green Practices in the Hotel Industry of Colombo, Sri Lanka.

Amarakoon AMPI[1]

[1]*Department of Social Sciences, Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka*

Background: Green practices are a major component of Sustainability, and the adoption of green practices in the hotel industry has become increasingly important due to the growing demand for environmentally friendly tourism. Due to various reasons, the hotel industry is currently facing various problems in adopting green practices. Accordingly, the study highlights the key challenges hindering the successful adoption of green practices in Colombo's hotel sector. The general objective of this study is to identify the main challenges to adopting green practices in Colombo's hotel industry.

Objective: The specific objectives are to explore current green practices in Colombo's hotel industry and to suggest strategies for overcoming the challenges of adopting green practices in the hotel industry.

Methods: This study is limited to the selected five-star hotels in Colombo, Sri Lanka. The study adapts the qualitative approach, utilising both primary and secondary data sources. Primary data was collected through semi-structured interviews with 20 respondents, including hotel managers, sustainability officers, maintenance staff and other relevant stakeholders. Participants were selected using purposive sampling, based on their direct involvement in environmental practices. The collected data were analysed using thematic analysis.

Results: The findings of the study revealed that five-star hotels in Colombo have implemented green practices such as energy-efficient systems, solar power, rainwater harvesting, and waste reduction initiatives. These measures aim to minimise the environmental impact of operations while promoting Sustainability within the hospitality sector. However, hotels face challenges such as the need for huge investments to implement and maintain green initiatives, limited environmental knowledge and training, a poor attitude towards environmental sustainability, space and location constraints, and inadequate government regulations, all of which hinder their successful adoption of green practices.

Conclusion: To overcome these challenges, the study suggests recommendations such as financial incentives, staff training, awareness programs, innovative space management and strengthening policy frameworks. This study offers valuable guidance on enhancing green practices in the hotel industry.

Keywords: Challenges, Colombo, Green practices, Hotel industry, Sustainability

SSH/OP/09

Ethical Concerns in Television News Reporting of Male Deaths in Sri Lanka: A Case Study Approach

Gunasingha KHE[1]

[1]*PGIHS Department of Fine Arts, Faculty of Arts, University of Peradeniya*

Background: Television news reporting in Sri Lanka plays a pivotal role in shaping public perception, particularly in relation to sensitive issues such as sudden or tragic deaths. However, such coverage often raises ethical concerns, including sensationalism and breaches of privacy. Male deaths were chosen as the focus because these cases are frequently framed through culturally specific gendered narratives that highlight risk-taking, violence, or sacrifice, thereby reinforcing stereotypes and intensifying sensationalisation compared to female deaths. The widely publicised case of Sathsara Nimesh, a Sri Lankan student whose death attracted intense media attention, exemplified these issues and prompted this study.

Objective: To assess the ethical standards applied in television news reporting on male deaths in Sri Lanka and to examine how such portrayals affect journalistic integrity and audience perception.

Methods: A qualitative case study design was adopted, analysing news coverage broadcast between January and June 2025 across five major Sri Lankan television channels selected purposively for their national reach and audience influence. Data sources included 15 news bulletins related to sudden male deaths, eight semi-structured interviews with journalists and media scholars, and three focus group discussions with 12 frequent viewers. Participant selection considered professional expertise and viewing frequency. Thematic analysis was conducted following Braun and Clarke's six-phase framework, supported by NVivo software to ensure rigour and transparency. Ethical safeguards, including informed consent, confidentiality, and voluntary participation, were strictly observed.

Results: Three key ethical concerns were identified: overexposure of victim identities (80.0%), use of sensational and emotionally manipulative language (73.3%), and failure to obtain family consent before broadcasting personal details (66.7%). These percentages reflect frequency counts across coded datasets. Focus group participants (91.6%) overwhelmingly described the coverage as "exploitative" or "unethical." Triangulated findings revealed that newsroom culture and institutional pressures to increase ratings were significant drivers of these ethical breaches.

Conclusion: The study concludes that ethical violations in reporting male deaths are systemic within Sri Lankan television journalism. It recommends mandatory ethics training for journalists, the integration of trauma-informed practices in newsrooms, and the establishment of clear national guidelines on death reporting, to be enforced by media regulatory bodies, press councils, and newsroom editors. Additionally, promoting public media literacy is crucial to fostering critical engagement with televised news.

Keywords: Male Deaths, Media Ethics, Sensationalism, Sri Lanka, Television Journalism

SSH/OP/10

The Impact of Thematic Diversity in Sinhala Fiction on the Growth of the Sinhala Novel

Weerasinghe WMN[1]

[1] *PGIHS, University of Peradeniya*

Background: Novel and theme depend on each other. Until now, researchers have studied the growth of novel creations, paying attention to their chronology. Studying of diversity of Sinhala novels and their contribution to the growth of the novel is covering a research gap in Sinhala literature.

Objective: This study proposes to investigate the impact of thematic diversity in Sinhala fiction on the development of the Sinhala novel and its structure. This research aims to find the connections between thematic influences and the structure of the Sinhala novels.

Methods: The research problem of this study is the influence of the thematic diversity of fictions by Piyadasa Sirisena and W. A. Silva on the growth of the Sinhala novel as a narrative form. This study adopts a desk research approach to achieve this aim, drawing on secondary data from a review of literature and primary data from *Jayathissa and Roslin,* as well as *Dingri Menika* by Piyadasa Sirisena and *Siriyalatha, Sunethra,* and *Radala Piliruwa* by W.A. Silva. The sample was selected from first novels of different themes, and the data was analysed by the theory of structuralism.

Results: According to the findings, these two authors have paid attention to various subjects. Novels by Sirisena mainly focus on fields such as Sinhala nationality, Buddhism, and traditional culture. Silva highlighted entertainment and historical themes. Therefore, it was improved in terms of language and literary features of the novels. Both authors used —love˜ as a common technique for different purposes. Piyadasa Sirisena was able to bring popularity to the Sinhala novel and eliminate negative ideas through his narratives, which mainly focused on themes such as marriage, kinship, and economy. W.A. Silva was able to make fiction a popular literary form, and through it, the language of narrative became smoother, providing the opportunity to experiment with various styles and conventions.

Conclusion: Both Silva and Sirisena contributed to broadening the subject scope of the novel. The study revealed that Sirisena and Silva created the basic impact of thematic diversity in Sinhala fiction.

Keywords: fiction, language terms, structure, thematic diversity

SSH/OP/11

Historical Approaches to Food Management in Sri Lanka During Famine and Drought Season

Irangani MKL[1], Wickramasinghe NGIM[1]

[1]*Department of Humanities, Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka*

Background: Famine can be defined as a disaster situation that poses a significant threat to human life. They are often caused by climate change, war, and government policies. A prolonged lack of rainfall causes drought. During this disaster, the people's need for food goes beyond nutrition or taste and is reduced to the meaning of 'preserving life'. This research explores the question of whether Sri Lankans' indigenous knowledge of food has been instrumental in sustaining human life in the face of famine and drought in ancient Sri Lanka.

Objective: The primary objective is to identify the foods that ancient Sri Lankans relied on for survival during periods of famine and drought. Secondary objectives include analysing the famines and droughts that affected ancient Sri Lanka, the causes and consequences of these disasters, and traditional food patterns.

Methods: Although a few studies were found on famine and Sri Lanka's traditional food culture, a research gap was identified on the contribution of traditional foods to tolerance to famine. Here, the qualitative research methodology is analysed through a historical comparative approach.

Results: Several disasters, including '*Bulukesaya', 'Baminithiyasaya', 'Ekanalika Saya',* '*Raktakshi* Plague', and '*Bhayasivasaya',* are attested by historical sources. Foods such as boiled rice water, rice porridge, wild potatoes, *Karakola*, lotus stems, and palm fruits were consumed, and these plants were able to withstand even severe drought. Through continuous water supply from irrigation systems, '*thahanchi',* and food preservation methods, people increased their resilience to famines.

Conclusion: Sri Lankans can attest to the fact that by conserving food during times of abundance, preventing overconsumption and waste, and managing the small amounts of food left, they have minimised loss of life during times of famine and drought.

Keywords: Drought, Famine, Traditional diet

SSH/OP/12

The Role of Music in Pain Reduction and Relaxation among Cancer Patients in Hospice Care: A Case Study at Shantha Sevana Hospice, Maharagama

Piyadigama PJT[1]

[1]*Department of Fine Arts, Faculty of Humanities, University of Kelaniya*

Background: Cancer poses a significant global health burden, affecting more than 19 million people annually worldwide, with nearly 10 million deaths reported each year. Palliative care plays a crucial role in addressing not only physical pain but also emotional and spiritual distress at the end of life. Beyond clinical treatments, non-invasive approaches such as music therapy are essential for alleviating pain and improving relaxation, thereby enhancing the quality of life in palliative settings.

Objective: To assess the influence of live music sessions, featuring songs chosen based on patient requests and cultural relevance-primarily Sri Lankan old classical and popular music-on pain reduction and relaxation among cancer patients at Shantha Sevana Hospice, Maharagama, Sri Lanka.

Methods: A qualitative case study was conducted at Shantha Sevana Hospice, Maharagama, with ten patients with cancer in palliative care. Patients attended weekly two-hour live music sessions for twelve months. Participants were purposively selected based on their readiness to engage actively, and sessions featured vocal and instrumental performances of traditional Sri Lankan popular songs, chosen according to patient preference. Pain was measured using the Visual Analogue Scale (VAS) before and after sessions. Relaxation responses were analysed using observations, discussions, and staff interviews, and data were descriptively presented as mean VAS changes with supporting narratives.

Results: A majority of patients showed notable reductions in pain scores following music sessions. Enhanced relaxation was consistently reported, with patients expressing comfort, emotional relief, and a sense of temporary escape from pain. Patient-wise analyses demonstrated steady improvements across successive sessions, indicating a cumulative benefit of repeated music exposure.

Conclusion: Music is an effective non-invasive intervention for pain reduction and relaxation, potentially stimulating the immune system and complementing cosmic and material aspects of healing. Future research could investigate its long-term effects and explore its integration into palliative care in Sri Lanka.

Keywords: Cancer, Music, Hospice Care

SSH/OP/13

A Sociological Study of the Factors Influencing the Modern Community's Departure from Traditional Indigenous Medical Services

Dharmasiri PAKD[1], Bhashitha WGY[2]

[1]*Department of Sociology, Faculty of Humanities and Social Sciences, University of Ruhuna*
[2]*Department of Sociology, Faculty of Humanities and Social Sciences, University of Ruhuna*

Background: The transmission of tangible heritage across generations is essential for maintaining cultural identity, and indigenous medicine has long played a central role in Sri Lanka's heritage. In the modern era, however, the use of traditional medical services has been steadily declining.

Objective: This study aimed to analyse the sociological reasons behind the community's declining reliance on indigenous medical services and to examine the influence of modern social patterns and Western medical services on this shift.

Methods: The study was conducted in Beruwala, Aluthgama, Bandaragama, and Mathugama, within the Kalutara District, using a qualitative research design. The study population comprised both community members and traditional practitioners, and purposive sampling was employed to select 12 participants for in-depth interviews, which were supported by focus group discussions and case studies. Semi-structured interview guides and focus group protocols were used as research tools, and data were analysed thematically. Secondary sources such as historical texts and official reports were reviewed to provide additional context.

Results: Findings revealed that lifestyle changes, including increased workloads and the adoption of a fast-paced economic model, encouraged communities to favour Western medicine due to its convenience and immediate results. The complexity of indigenous medical systems, legal restrictions and ethnic perceptions that frame it as belonging to a single community further reduced acceptance. Moreover, insufficient public awareness and limited dissemination of knowledge regarding the value of traditional practices were identified as major barriers to their continuity.

Conclusion: The study concludes that preserving indigenous medicine requires deliberate and proactive efforts to reshape public perceptions and highlight its cultural and practical significance. Collaborative initiatives by governmental and non-governmental organisations, including awareness campaigns, educational programs and community workshops, are recommended to ensure the Sustainability of indigenous medicine alongside modern healthcare systems.

Keywords: Cultural Identity, Indigenous Medicine, Tangible Heritage.

SSH/OP/14

Treatment of 'Personification' as a Literary Device in Translation: A Study with Reference to Translating Gothic Literary Texts

Bandaranayake WMYRM[1]

[1]*Department of Linguistics, Faculty of Humanities, University of Kelaniya*

Background: Personification, as a literary device, deals with attributing human characteristics to non-human objects. Such personified elements are generally perceptible as far as Gothic literary texts are concerned.

Objective: This study aimed to investigate how personified terms, particularly those appearing in Gothic novels, have been translated from English to Sinhalese, with special reference to the English novel *Dracula* by Bram Stoker and its corresponding Sinhalese translation, which also bears the same title, by Chandra Anagirathne.

Methods: A mixed-method approach was followed. A qualitative analysis was performed on the personified expressions appearing in the English novel by comparing them with the corresponding translated text. Furthermore, a quantitative analysis was conducted to evaluate the frequency of translation strategies employed.

Results: The findings revealed that several strategies have been used in the context of applying the literary device of personification when transferring such personified expressions from English to Sinhalese. They can be stated as recreating the same meaning in the Target Language, replacing the Source Language term with an equivalent in the Target Language, translating the sense of the personified expression by using a more general expression, and omitting the whole utterance or text incorporated in the personified expression. When the frequencies of translation strategies were considered, it was evident that the translator had applied the strategies of omitting and using a more general expression to convey the sense of the personified expression.

Conclusion: It can be concluded that, since literary translation clearly involves two distinct cultures, it would be more comprehensible if the translator had attempted to apply equivalents in the Target Language when transferring the personified expressions.

Keywords: Gothic Texts, Literary Translation, Personification

SSH/OP/15

Identifying Rainfall Variation for Flood Risk Management: A Study in the *Deduru Oya* Basin in Sri Lanka

Wanninayake WMSB[1]

[1]*Department of Environmental Management, Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka*

Background: Sri Lanka is highly vulnerable to the adverse effects of climate change, which threaten various sectors, including water resources, agriculture, and disaster management. The rainfall within a river basin plays a crucial role in sustaining ecosystems and can cause disasters such as floods, droughts, and landslides. Variation of average rainfall can significantly influence the above. However, in the case of flood risk, all the components —hazard, exposure, vulnerability, and capacity — work together to increase or decrease the flood risk.

Objective: This study examines rainfall variation in the Deduru Oya basin and its impact on flooding.

Methods: Rainfall data were collected from six rain gauge stations for 60 years from 1960 to 2019, and the Time-series data analysis method, Mann-Kendall (MK) test, and Sen's slope estimator were applied. Recorded flood events were identified from various secondary sources. Both qualitative and quantitative data analysis methods were used to analyse data.

Results: The basin experienced a decline in rainfall. Peak rainfall typically occurred from April to May and from October to November, with a median monthly rainfall of 110 mm. The Mann-Kendall (MK) test and Sen's slope estimator showed a decline in rainfall. In 1960, the average monthly rainfall was 140 mm, which decreased to 108 mm by 2019, resulting in a total loss of 32 mm (MK p-value = 0.01) over the six decades, indicating a significant decrease. Ten (10) flood events were reported from 2010 to 2019 in the lower part of the river basin, affecting nearly 50,000 people.

Conclusion: The monthly rainfall in the Deduru Oya basin declined, which can reduce flood hazards; however, increased exposure and vulnerability increased the flood risk in the study area. Accordingly, more attention should be given to reducing exposure and vulnerability while increasing the capacity to cope with floods. Hence, understanding rainfall variation is crucial for effective water resource management and disaster risk reduction.

Keywords: Deduru Oya basin, Flood risk management, Rainfall variation

SSH/OP/16

An Autoethnographic Inquiry into the Role of the Film Producer in Sri Lankan Cinema

Ruwanpathirana I[1]

[1]*Department of Mass Communication, Faculty of Social Sciences, University of Kelaniya*

Background: The film producer holds one of the most crucial roles in filmmaking, overseeing all aspects of the film production process. Globally, producers actively manage the creative, technical, and business aspects of production. However, in the Sri Lankan film industry, the role of the producer is often limited or misunderstood.

Objective: This study explores how the role of the film producer is understood and practised in Sri Lanka through the lived experiences of the researcher, an industry practitioner with over ten years of experience in the Sri Lankan film industry.

Methods: Based on relativism as the ontological position and interpretivism as the epistemological position, an autoethnographic strategy was employed in combination with two case studies. The first, as a researcher serving as an executive producer for a veteran film producer; the second, as a line producer for a newcomer producer. The primary data were gathered using reflexive writing, memory recall, production documents, informal interviews and conversations with crew members. The gathered data were analysed by conducting a thematic analysis.

Results: The research revealed that the producer's role in the Sri Lankan film industry is predominantly limited to financial investments, with minimal contribution and engagement in the creative, technical, and managerial aspects of filmmaking. Most of the time, producers are wealthy individuals (businessmen or politicians) who lack theoretical and practical knowledge of film production. Additionally, some investors engage in film production for non-artistic reasons, such as leveraging the industry for financial advantages or social prestige. And those very reasons lead them to passive participation, confusion, frequent exploitation and disappointment. Because of the absence of clarity and authority of the producer's role in film production, the collaborative relationship between the director and the producer breaks and discourages future investments in the industry. Since the contemporary Sri Lankan film industry is director-centric, the creative and operational control heavily lies with the director, marginalising the producer's voice in key decision-making. The film crew develops a culture of disrespect towards the producer, seeing them as outsiders or mere financiers rather than creative stakeholders.

Conclusion: The study concluded with a strong opinion emphasising the need to redefine the role of the film producer, recognising the profession not only as funders but also as active creative and managerial partners.

Keywords: Autoethnography, Film producer, Film industry, Role, Sri Lanka

SSH/OP/17

From Bailouts to Breakdown: A Content Analysis of Institutional Reports on SOE Failures and Reform Barriers in Sri Lanka

Shyamal SR[1], Bandara HGKN[1], Gamage SKN[1], Prasanna RPIR[1]

[1] *Department of Economics, Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka*

Background: The continued financial deficit of State-Owned Enterprises (SOEs) has become a major fiscal concern, as it contributes to growing budget deficits and macroeconomic instability. For instance, in 2023, SOEs seized 5% of total government expenditure through Treasury funds and bailouts, indicating the need for immediate focus on SOE reform in the national fiscal consolidation efforts.

Objective: To examine the scale and structure of the fiscal burden of SOEs, their underlying causes, and the outcomes of SOEs reform efforts.

Methods: The study employed a qualitative content analysis of 75 institutional reports, published by the Ministry of Finance, Central Bank of Sri Lanka, National Audit Office, IMF, World Bank, etc, and thematic analysis was conducted on five major loss-making SOEs- CEB, CPC, SLA, SLTB, and SATHOSA. The period from 2013 to 2023 was considered for the study.

Results: Findings revealed cumulative losses of LKR 1.64 trillion from 2013–2023 across 18 key SOEs, with the energy and aviation sectors alone accounting for over 95% of losses. Core drivers of these losses include politicised management, lack of cost-reflective pricing, procurement inefficiencies, debt burdens, and weak audit mechanisms. Although policies such as cost-reflective pricing, digital procurement, and improved internal auditing have been proposed to enhance SOEs' performance, their implementation has faced major setbacks due to weak institutional settings, political interference, and bureaucratic inefficiencies. The influence of powerful trade unions, inconsistent policy environments, and poor management practices has further hindered progress. Additionally, other causal factors include external economic shocks, high reliance on imports, institutional weaknesses at the domestic level, and inefficiently maintained or poorly managed capital infrastructure, all of which have caused chronic financial instability and threatened the future viability and performance of Sri Lanka's SOEs.

Conclusion: Sri Lanka's SOEs require urgent, depoliticised structural reforms to reduce fiscal strain, enhance efficiency, and restore long-term economic Sustainability and accountability.

Keywords: Content Analysis, Fiscal reform, Public finance, State-owned enterprises

SSH/OP/18

Are Low-Income Households Food-Secure in Sri Lanka? A Case of Rathnapura District

Jayaweera GKR[1], Dammika Padmakanthi NP[2], Anupama Dias NKLU[3]

[1]*Department of Economics, Faculty of Social Sciences, University of Kelaniya*
[2]*Department of Economics, Faculty of Social Sciences, University of Kelaniya*
[3]*Independent researcher*

Background: Food security is a key concern in economic and social development. However, it is questionable whether rural low-income households are adequately food secure to lead a healthy life due to problems inherent in the rural sector, a high risk of vulnerability to macroeconomic shocks, and the adverse impact of climate change. Hence, understanding the food security status of low-income households is essential for formulating appropriate policies to achieve the zero-hunger target of the Sustainable Development Goals.

Objective: This study aims to analyse the food security status of low-income rural households and the impact of coping strategies for food insecurity.

Methods: Primary data collected from 400 households, selected using purposive and random sampling methods in the Ayagama Divisional Secretariat Division of the Rathnapura district, were analysed to achieve the objectives. The Household Dietary Diversity Score and the Household Food Insecurity Score were used to measure the food security status.

Results: The results indicate that the majority of households (62%) have a moderately diversified diet, while only 15.6% have an adequately diversified diet. Nearly half of households (48.1%) are food secure, while the remaining households suffer from mild (10.6%), moderate (30.5%), or severe (10.8%) food insecurity. Food insecurity coping strategies negatively affect their health condition and long-term economic stability.

Conclusion: Rural low-income households are not food secure at a satisfactory level, and their food security coping strategies have a negative impact on both their short-term and long-term well-being. It is recommended to provide direct food assistance to ensure short-term food security while implementing appropriate policies to enhance their long-term resilience to food insecurity.

Keywords: Dietary Diversity Score, Food Insecurity Score, Low-income rural households

SSH/OP/19

Exploring the Present Perfect Aspect in Acrolectal Sri Lankan English Using Written Corpus Data.

Kumara MDSS[1], Wehella DA[1], Pathirana HPK[1], Kumari RMLC[1], Bandara SMC[1], Nandaratne BGDS[1], Jayawickrama MPCR[1]

[1]*Department of English Language Teaching, Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka*

Background: Sri Lankan English (SLE) has been described as a semi-autonomous variety of English, characterised by variety-specific structural features. Unlike many other studies based on learner English data, the present study uses a standard corpus which provides acrolectal SLE data for empirical studies.

Objective: The objectives of the present study were to explore the uses of the present perfect tense in SLE using the International Corpus of English -Sri Lanka (ICE-SL) and to investigate whether variety-specific tendencies are found.

Methods: The study employed a corpus-based methodology, in which the 400,000-word written component of the ICE-SL, compiled at the University of Colombo, was analysed using the concordancer AntConc. Version 4.3.1. Auxiliaries used in the present perfect tense were used as search words, and the first two past participles of the verbs were used as the Right collocates. Eight uses of the present perfect tense, as identified in pedagogical models based on reference grammars, were analysed qualitatively by manually reading the concordance lines to determine their applications.

Results: The predominant use of the tense in the data set was 'to describe a past action with present relevance', which accounted for 643 instances (43.6%) out of the 1474 analysed concordance lines. This was followed by 'recently completed actions', and 'experiential past', which accounted for 17.7% and 16.1% instances respectively. There were also instances of the use of the tense in occasions where simple past and past perfect tenses would be more appropriate, albeit as low-frequency phenomena (less than 1%).

Conclusion: The study suggests that the main uses of the present perfect tense in standard written SLE comply with pedagogical models based on native language varieties of English. Nevertheless, the occurrence of variety-specific uses may be attributed to SLE bilinguals' transfer from their first languages, shedding light on structural features of SLE.

Keywords: Corpus, Present Perfect, Sri Lankan English.

SSH/OP/20

Bridging the Financial Literacy Gap: An Analysis of Financial Literacy of Low-Income Rural Households in Sri Lanka

Anupama Dias NKLU[1], Dammika Padmakanthi NP[2], Jayaweera GKR[3]

[1]*Independent researcher*
[2]*Department of Economics, Faculty of Social Sciences, University of Kelaniya*
[3]*Department of Economics, Faculty of Social Sciences, University of Kelaniya*

Background: Sound financial decision-making is one of the key factors affecting the socioeconomic well-being of individuals, households, and ultimately the country's development, while poor financial decision-making contributes to the cycle of poverty. The rural sector of Sri Lanka suffers from limited facilities and many inherent disadvantages, resulting in rural people having a low socioeconomic background. Hence, it is crucial to investigate whether low-income rural households are adequately financially literate to make sound financial decisions.

Objective: This study investigates the current status of financial literacy and its determinants in low-income rural households.

Methods: Primary data, which were collected from 400 low-income households using purposive and random sampling methods in the Rathnapura district in Sri Lanka, were used to analyse the objectives. Financial literacy level was computed by considering financial knowledge, attitudes, and behaviour. A multiple regression model was employed to identify the determinants of financial literacy.

Results: The majority of households have a low level of financial literacy, often accompanied by poor financial knowledge. Around 90% of households do not have knowledge of basic financial concepts, and particularly, numerical and calculation skills are poor. However, nearly 75% of households have a high level of financial attitudes, but financial behaviour is low, especially because of low income. Socioeconomic factors and the availability of infrastructure facilities significantly influence financial literacy.

Conclusion: Rural low-income households do not have an acceptable financial literacy level to make sound financial decisions. Conducting specially designed programs to enhance the financial knowledge and financial management of adults in rural low-income households is recommended. The implementation of finance-related infrastructure facilities, such as financial institutions in marginalised areas, is also essential. Further, it is crucial to implement mechanisms to boost income since low income highly influences poor financial behaviour.

Keywords: Determinants of financial literacy, Financial literacy, Low-income rural households.

SSH/OP/21

Psychological and Emotional Dynamics in Sri Lankan Journalism (With Special Reference to Newspaper Content)

Thambawita N[1], Bandara YGSI[2]

[1]*Faculty of FGS, University of the Visual and Performing Arts*
[2]*Department of Mass Communication, Faculty of Social Sciences, University of Kelaniya*

Background: In contemporary society, the purpose of communication is questionable, as the contents of newspaper articles can cause personal distress, foster negative attitudes, and spread false information that is defamatory and injurious to human dignity. They ultimately lead to detrimental effects, including miscommunication, conflicts, and disappointment.

Objective: The Prime objective of this research is to study the psychological differences and natures of journalists. Latent emotions in the unconscious can surface into conscious awareness, often through sublimation. Whereas the unconscious of a human is structured as a language, and such unconscious emotions may activate during the compilation of newspaper reports.

Methods: The study involves twenty (20) reports related to complaints heard by the Sri Lanka Press Council, which are controversial and widely debated within the media arena, as well as ten (10) newspapers reporting incidents of crime and abuse, which were revealed by the Council as violation of ethics, analysed through Psychological Textual Analysis namely, Psycholinguistics and Narrative Analysis.

Results: The analysis of feature articles reveals unconscious psychological differences among journalists, which are reflected in their reports. It is observed that the words, meanings, narrations, perspectives, metaphors, creative writing styles, and phrases, as well as the information categories and compositions, and the overall page layouts, including corresponding photographs, colour combinations, and computer effects, parallel the research hypotheses. Examination of reports relating to complaints on the other hand reveals that the portrayal of aforesaid conclusions are minimal, however, it is concluded that one or more of the following three segments may affect in compilation of newspaper reports; namely, socio-political, economic, cultural and other reasons, the influence of a third party and the psychological differences of persons contributed to the report.

Conclusion: The unconscious psychological differences in journalists are reflected in their reports.

Keywords: Psychoanalysis, unconscious, latent, emotions, sublimation

Social Sciences & Humanities

Poster Presentations

SSH/PP/01

A Study of Mediation Attempts for Long-Term Peace
A Comparative Analysis between the Northern Ireland Troubles and the Sri Lankan Ethnic Conflict

Siriwardana GKYS[1], Siriwardene PPGC[2]

[1]*Department of Philosophy, Faculty of Social Science, University of Kelaniya*
[2]*Department of Philosophy, Faculty of Social Science, University of Kelaniya*

Background: This study conducts a comparative analysis of mediation efforts in two protracted ethnopolitical conflicts: the Sri Lankan ethnic conflict and the Northern Ireland Troubles. Both cases were marked by deep ethnic divisions, prolonged violence, and the involvement of third-party mediation. Despite these similarities, outcomes diverged: Norwegian-led mediation in Sri Lanka failed to achieve lasting peace, whereas the U.S.-facilitated Good Friday Agreement, supported by the British and Irish governments, secured relative stability in Northern Ireland.

Objective: The study aims to identify the factors that contributed to the divergent outcomes of these two conflicts, using the Contingency Model of Mediation as the analytical framework.

Methods: A qualitative cross-case study design was employed, drawing on peace process documents, secondary literature, and key informant interviews with practitioners and scholars. Thematic analysis, supported by NVivo software, was used to examine contextual and process variables highlighted in the Contingency Model of Mediation.

Results: The findings reveal that while the Contingency Model helps explain mediation dynamics, it does not fully capture structural and political complexities. Success in Northern Ireland was facilitated by strong political will, inclusive frameworks, sustained external support, and robust institutional mechanisms. In contrast, the Sri Lankan process was hindered by fragmented political commitment, stakeholder exclusion, and weak implementation capacity.

Conclusion: Mediation in ethnopolitical conflicts is shaped not only by strategies but also by the surrounding political and structural environment. The study provides insights for policymakers and practitioners by emphasising the importance of contextual conditions in designing mediation processes

Keywords: Mediation, Contingency Model, Sri Lanka, Northern Ireland, Conflict Resolution

SSH/PP/02

"It's Seasonal and an Oceanic Burden": Garbage and Everyday Life in Mannar, Sri Lanka

Kithsiri T[1], Senevirathne RPWP[2], Karunarathne A[2], Munasinghe A[2], Pramodya D[2]

[1]*Department of Geography, Faculty of Arts, University of Peradeniya*
[2]*Department of Geography, Faculty of Arts, University of Peradeniya*

Background: This work explores how island residents in Mannar, Sri Lanka, perceive and coexist with coastal waste, much of which is imported from outside national boundaries. While coastal waste in trash sites is typically studied as an environmental concern, very little has been published regarding how island communities perceive and comprehend this waste in their daily lives.

Objective: The research aims to explore how the garbage in Mannar is socially and culturally normalised and what this reveals about broader debates in cultural geography and political ecology.

Methodology: The study employs a photo documentation methodology. In addition, a three-day field trip in Mannar was conducted using qualitative methods, including semi-structured interviews with 10 residents and field observations. Ten photographs were used for analysis to capture spatial and cultural patterns of waste collection, and the interviews provided insights into the local community's perception of seasonality, responsibility, and the role of the ocean in the waste cycle.

Findings: The findings suggest that this garbage is not primarily a local problem, but rather a seasonal phenomenon related to the ocean. The community here views the ocean as a waste carrier and remover, underscoring the urgent need for community-led waste management. While these perceptions are often generalised as 'part of nature', much of the debris found here originates from countries such as India, China, and Japan, thereby obscuring issues of transboundary responsibility.

Conclusion: The study concludes that Mannar's waste acts more as a burden on the ocean than a societal responsibility, reinforcing narratives of nature's agency in dealing with waste. This highlights the need for policy attention to transboundary marine debris management, while also contributing to theoretical debates about how people construct ecological normalisations in the face of environmental risks.

Keywords: Coastal waste, marine debris, cultural geography, ecological normalisations, Mannar

SSH/PP/03

Framing the Climate Crisis Through Fiction: A Content Analysis of Three Asian Films

Senathilaka SATT[1]

[1]*Department of Drama, Cinema and Television, Faculty of Humanities, University of Kelaniya*

Background: Climate change communication is often led by scientific methods, which may not always connect with wider audiences. Fictional cinema, however, has the potential to communicate environmental concern through visual storytelling. This study investigates how climate-related themes are portrayed in three Asian films: 2018: Everyone is a Hero (2023, India), Cloudy Mountain (2021, China), and Hanging Garden (2022, Iraq).

Objective: To examine how environmental issues, emotional tones, and character representation in these films.

Methods: Scenes highlighting climate change and environmental issues were selected from each film. These scenes were systematically coded in an Excel sheet using binary coding, which allowed quantification of the frequency of environmental issues, emotional tones, and character representations.

Results: Findings show distinct thematic emphases across the films: "2018: Everyone is a Hero" highlights flooding (71%) and fear (40%); "Cloudy Mountain" emphasises landslides (79%) and sadness (32%); while "Hanging Garden" centers on smog (58%) and shame (35%). Characters range from heroic figures to marginalised outcasts, reflecting region-specific responses to climate crises.

Conclusion: The results suggest that Asian fictional films frame the climate crisis by interweaving environmental realities with emotional storytelling and diverse character portrayals. While the current study relied on content analysis, integrating audience interviews in future research could provide deeper insights into how viewers engage with these narratives. Fictional cinema thus holds strong potential as a cultural medium for climate communication and public education.

Keywords: Climate Change, Climate Crisis, Content Analysis, Visual Storytelling

SSH/PP/04

Quality Education with Sustainable Development Goals (SDGs) No. 4: Teacher Perceptions in Sri Lanka

Kumari HANP[1], Elvitigala SS[2]

[1]*Kottawa Ananda College, Pannipitiya*
[2]*Mahamaya Girls College, Nugegoda*

Background: Quality education is central to achieving Sustainable Development Goal (SDG) No. 4, which advocates for inclusive and equitable learning opportunities for all. In Sri Lanka, there is a growing policy emphasis on knowledge-based education that fosters critical thinking and creativity rather than rote memorisation. Understanding teachers' perceptions of this educational shift is essential, as teachers play a pivotal role in translating policy into classroom practice.

Objective: To explore teachers' perceptions of implementing knowledge-based education aligned with SDG 4 in Sri Lankan senior high schools and to identify perceived barriers and recommendations for effective integration.

Methods: A qualitative study design was employed in selected senior high schools across urban and semi-urban areas in Sri Lanka. The study population consisted of high school teachers, with a purposive sample of 25 participants (52.0% female; mean teaching experience 12.3 years). Data were collected through semi-structured interviews and focus group discussions, and thematically analysed using NVivo software.

Results: A majority of teachers (84.0%) supported the shift towards critical thinking and project-based learning, citing increased student engagement. However, 68.0% highlighted unequal student access to digital tools as a major barrier, and 72.0% noted gaps in digital literacy. Most teachers (80.0%) expressed concern that current assessment practices remain focused on memorisation rather than evaluating analytical skills. Teachers identified strong leadership and continuous professional development as essential supports for successful implementation. Teachers are generally positive toward knowledge-based education but recognise systemic challenges, including access disparities and outdated assessment methods.

Conclusion: Targeted investments in teacher training, educational infrastructure, and assessment reform are recommended to advance SDG 4 objectives and improve equity and quality in Sri Lankan education.

Keywords: Curriculum, Equity, Teachers

SSH/PP/05

An Ethnological Study of Dambana Veddas and Pandiggama Vanni Veddas

Pushpakumara RDD[1]

[1]*Temporary Assistant Lecturer, Department of History and Archaeology, Faculty of Humanities and Social Sciences, University of Ruhuna*

Background: The Vedda tradition, Sinhala, and Tamil traditions can be observed in Vanni Vedda villages, as they are located in Nuwara Kalaviya. Pandiggama Vanni Vedda village is located in the Anuradhapura district. In this study, the Dambana Vedda culture is regarded as the ideological representation of the traditional Vedda way of life. By positioning Dambana as a cultural benchmark, the research systematically compares the cultural traits of the Pandiggama Vanni Vedda community with those of Dambana.

Objective: The research objective is to conduct an ethnological study of the Dambana Veddas and Pandiggama Vanni Veddas. The research problem is whether the Pandiggama Vanni Veddas can be identified as a Vedda group belonging to a sub-Vedda culture in Sri Lanka.

Methods: Two field methods were employed: participatory observation and interviews, including focus group interviews.

Results: Interviews were conducted with 30 people in Dambana and Pandiggama. The ritual of "Kande Yaka" is a unique ritual of the Dambana Veddas. A similar ritual can be seen among the Pandiggama Vanni Veddas. That is the ritual of "giving alms to the Vedda mountain" (Vedda Kandata Dan Deema), where offerings are made to honour deceased relatives, as similarly practiced in Dambana. Vedda Mountain is unique because hunting activities have been practiced since ancient times. Unique rituals to the Pandiggama, "Deviyan mayam weema" and "Pideni Shanthiya" are not found in the Dambana. There are several linguistic similarities between the Dambana and Pandiggama languages. Specifically, such similarities can be seen in the terms used for animals. On the other hand, as the Nuwara Kalaviya language has influenced the Pandiggama language, it shows specific differences from Dambana.

Conclusion: Due to the ecological background and location of Pandiggama, the unique features of its rituals, language, and social aspects are evident. Therefore, Pandiggama Vanni Veddas can be identified as a sub-Vedda culture of the island.

Keywords: Dambana, Ethnology, Pandiggama Culture

SSH/PP/06

Rethinking coastal urbanization in the global south: A case study of a nature-based sustainable model for the Port City Colombo

Peiris HAM[1], Jayasuriya KAJS[1]

[1]*Department of Environmental Management, Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka*

Background: Port City Colombo, Sri Lanka's biggest public-private urban development project, presents a unique opportunity to study the combination of sustainability and innovation in a newly reclaimed coastline setting. Spanning 269 hectares, the project represents a paradigm shift from traditional infrastructure-led urbanism to a model founded on Nature-Based Solutions, climate responsiveness, and circular resource loops.

Objective: This paper critically evaluates the socio-economic and environmental strategies implemented in the Port City of Colombo, focusing on their effectiveness in advancing the sustainability agenda through the Port City as a case study. It examines the need for a holistic approach through initiatives such as ecosystem restoration, green infrastructure development, and governance through public-private partnerships, and how the project contributes to aligning with the Sustainable Development Goals and achieving carbon neutrality in Sri Lanka by 2050.

Methods: The study employs a cross-sectional design and follows a case study approach. Based on the 2024 ESG Report and Port City Development Control Regulations data as secondary data, this research aims to explore initiatives such as the rehabilitation of marine ecosystems, gravity-fed rainwater reuse systems, and the construction of over 40 hectares of urban green spaces.

Results: The analysis of the 2024 ESG Report and Port City Development Control Regulations shows that Nature-Based Solutions and green–blue infrastructure, such as coastal buffers, urban green spaces, and storm water reuse, are embedded in project controls, demonstrating alignment with SDGs 6, 11, 13, and 14 and Colombo's climate adaptation agenda. While design measures to reduce operational emissions through efficiency and circular resource use are evident, the absence of lifecycle carbon accounting, interim milestones, or a defined pathway to 2050 means alignment with Sri Lanka's carbon neutrality target is only partial.

Conclusion: Port City Colombo demonstrates a strong commitment to aligning with global and national sustainability goals through the implementation of green infrastructure, ecosystem restoration, and innovative governance. Measurable evidence of carbon reduction and socio-economic benefits is still limited. The project represents a promising model, but its true contribution to the SDGs and Sri Lanka's 2050 carbon neutrality target will depend on transparent implementation and long-term monitoring.

Keywords: Nature-Based Solutions, Urban Sustainability, Port City Colombo, Coastal Resilience, Green Infrastructure

SSH/PP/07

Empowerment or Exploitation? A Literature Review on the Dual Perspective of the Gig Economy

Wanigasuriya WMTJ[1], Peduruhewa HR[1], Gunasekara ANNM[2]

[1]*Department of Business Management, Faculty of Business Management, Sri Lanka Technology Campus*
[2]*Department of Economics, Faculty of Humanities and Social Sciences, University of Ruhuna*

Background: The gig economy is a labour market composite with short-term, on-demand, platform-mediated work arrangements that have replaced traditional, long-term, secured employment. Since 2010, the rise of digital platforms such as Uber, Fiverr, and Upwork has transformed the nature of work, providing a pathway to flexible and diverse income opportunities. Proponents highlight its potential for flexibility, autonomy, and entrepreneurship, whereas critics argue that it fosters income precarity, lack of social protection, and psychological stress. This duality has made the gig economy a pertinent topic in labour policy and academic fields. Despite a plethora of research, there is no solid consensus on whether gig work is empowering or exploitative, while creating regulatory challenges for policymakers.

Objective: To examine the empowerment perspective of the gig economy through flexibility, autonomy, entrepreneurial potential, and improved access to income opportunities. To examine the exploitative perspective of the gig economy in terms of precarious income, lack of social security, and negative effects on health and well-being. To propose evidence-based policy recommendations that can enhance empowerment while mitigating exploitation.

Methods: A systematic literature review was conducted in accordance with the PRISMA guidelines. Peer-reviewed articles (2010–2024) were sourced from Google Scholar, Elsevier, and manual searches. After screening 243 records and removing duplicates, 48 studies were selected for inclusion.

Results: Findings reveal a dual scenario. Gig work empowers through flexibility, low entry barriers for marginalised groups, and opportunities for skills and supplemental income. However, it also exposes workers to irregular earnings, the absence of social protection, algorithmic control, overwork, and contractor misclassification.

Conclusion: The gig economy is both empowering and exploitative. A balanced approach is required, including hybrid employment classifications, minimum pay and protection standards, algorithmic transparency, and capacity-building for workers. These measures can maximise empowerment while reducing precarity.

Keywords: Gig Economy, Empowerment, Exploitation

SSH/PP/08

Psychological Problems That Arise When a Teacher Engages in Teaching Outside of Their Specialised Subject Area (Special Reference to Gampaha Area)

Edirisinghe EARK[1], Silva HSN[2]

[1]*Undergraduate, Department of Sociology, University of Kelaniya*
[2] *Postgraduate, Department of Sociology, University of Sri Jayawardenepura*

Background: A teacher, often referred to as a schoolteacher or an educator in formal terms, is a person who utilises the teaching profession to help pupils acquire knowledge, skills, or moral values. This study has focused on teachers' instruction outside of their specific subject area because they are a crucial component of the nation's overall educational system.

Objective: The main objective was to identify the psychological problems that arise when teachers teach outside their specialised subject area.

Methods: A qualitative research methodology was primarily employed for this study. The findings from the primary data analysis of the research were analysed through descriptive analysis along several themes. This research was conducted by selecting a sample of sixteen schoolteachers in the Gampaha region. The collected data was used to separately and in-depth analyse the psychological problems that arise when teachers teach outside their specialised subject area.

Results: According to the data, the primary reason teachers are required to teach subjects other than their own is that the school does not have any openings for the subjects they have studied. Additionally, psychological issues resulting from the teacher's instruction outside of their area of expertise could be identified. Examples include stress, sadness over not being able to apply what they have learned, language issues when teaching a language subject (like English) outside of their field of study, and job dissatisfaction.

Conclusion: A key conclusion that can be drawn from all of this is that these teachers appear to be experiencing significant stress and strain in their daily lives. This can also be further highlighted as a factor that may eventually harm the education of children and the educational system. Recommendations are made to establish a formal committee to investigate the mental health and other issues that these teachers confront and to encourage them to take action to address these issues.

Keywords: Psychological issues, Specialisation, Subject Area, Teacher, Teaching

SSH/PP/09

Preserving Culture Through Cuisine: A Study of Traditional Values and Planetary Care in the YouTube Channel Traditional Me

Weerasinghe WNPMJP[1]

[1]*Department of Mass Communication, Faculty of Social Sciences, University of Kelaniya*

The Sri Lankan YouTube channel "*Traditional Me*" features video content produced by Nadee, who specialises in presenting traditional Sri Lankan and other cultural cuisines. There is a limited number of research studies on how Asian content creators in countries like Sri Lanka utilise YouTube and other platforms to communicate traditional knowledge systems, particularly through food culture. This study fills the gap between how the Sri Lankan YouTube channel *Traditional Me* represents ecological preservation, traditional values, and cultural continuity. This area remains unexplored in environmental communication, media studies, and cultural studies. This research aims to study how traditional cultural values are portrayed and preserved through digital media by the Sri Lankan YouTube cooking channel *Traditional Me.* Through an analysis of its narrative and visual components, which reflect the values of community, care, and tradition, as well as its promotion of locally grounded, sustainable practices, this study seeks to understand how the YouTube channel *Traditional Me* constructs and communicates Sri Lankan cultural identity through food. Additionally, it will analyse a broader function of digital media in preserving and promoting cultural heritage in the modern era. This study utilises a qualitative research methodology, which makes it ideal for exploring in-depth media portrayals. Qualitative content analysis is employed to gather primary data for this study. The results of this study highlight how diverse perspectives on growth, rooted in tradition, care, and ecological consciousness, can be promoted through local, non-commercial media content. Such media interventions offer valuable insights into how cultures of care may impact human and planetary wellbeing in a rapidly modernising and digitising society. *Traditional Me* encourages rethinking advancement in ways that prioritise sustainability, intergenerational knowledge, and emotional connection, while also contributing to cultural preservation.

Key Words: Content Creators, Food Culture, Planetary Wellbeing

SSH/PP/10

Problems Faced by The Rural Paddy and Vegetable Farmers in Sri Lanka (With Special Reference to Kurunegala District)

Bandara HGKN[1], Damayanthi BWR,[2] Heenkenda S[2]

[1]*Department of Economics, Faculty of Social Sciences, Rajarata University of Sri Lanka*
[2] *Department of Economics, Faculty of Humanities and Social Sciences, University of Sri Jayewardenepura, Sri Lanka*

Background: Rural paddy and vegetable farmers in Sri Lanka face numerous challenges. Compared to other sectors, the contribution of agriculture to GDP has gradually declined, from 7.5% in 2024, despite a large portion of the workforce (26%) being directly employed in the sector. This situation has resulted in income inequality, poverty, vulnerability, low educational attainment, and a vicious cycle of low income. Addressing these issues requires strategic solutions, where the government's role is particularly crucial. However, limited studies have been conducted to examine the problems faced by Sri Lankan vegetable and paddy farmers.

Objective: To identify the problems faced by rural Paddy and vegetable farmers in Sri Lanka.

Methods: The problem of the current study emphasises the main challenges faced by rural paddy and vegetable farmers. Using the purposive sampling method, 13 experienced farmers were selected from the population, and data were collected through in-depth interviews under the qualitative approach, then analysed using thematic analysis.

Results: Most of the farmers, 10 out of 13, had more than 25 years of experience, and 92% were male, mostly adults. Most of the farmers had education levels only one having completed an Advanced Level qualification. Most farmers, due to their limited qualifications, had chosen farming as a career. However, they engaged in farming with happiness and a sense of freedom. The study found females and youth in farming was comparatively low. Thematic analysis revealed the main problems, including wild animal attacks, water scarcity, climate-related issues, financial constraints, inadequate government and institutional support, price fluctuations, market-related problems, land fragmentation, and high production costs.

Conclusion: Rural farmers face numerous challenges, including poverty, low income, and economic vulnerability. Young, educated females are reluctant to engage in agriculture. Therefore, government support programs should be redesigned to better address the needs of rural farmers.

Keywords: Problems of Farmers, Agriculture, Rural Sector

SSH/PP/11

A Sociological Study on the Decline of the Traditional Puppet Art of Ambalangoda.

Kapuge DKD[1]

[1]*Department of Sociology, Faculty of Humanities and Social Sciences, University of Ruhuna*

Background: The traditional puppet art of Ambalangoda, a unique intangible cultural heritage of Sri Lanka's Southern Province, once flourished as a vibrant form of folk theatre. Recently, it has experienced a significant decline due to social, economic, and institutional challenges, including a lack of sustainable income, limited recognition, and insufficient training opportunities.

Objective: This study aims to identify the sociological factors contributing to this decline and to propose strategies for its sustainable revival.

Methods: A qualitative research design was employed in the Balapitiya area of Ambalangoda, involving 12 in-depth interviews with practising and retired puppeteers, supported by observations and analysis of primary and secondary documents. Thematic analysis was used to interpret the findings.

Results: Results indicate that only two major puppet groups remain active, while many traditional artists have abandoned the craft. Younger generations show limited interest in learning puppet art, which threatens the intergenerational transmission of this art form. Despite its potential to generate tourism revenue and community-based employment, puppet art remains underutilised. Structured training programs, integration into school and community initiatives, and workshops modelled on traditional low-country practices are largely absent.

Conclusion: The study concludes that immediate, coordinated interventions—such as strengthening institutional support, implementing training programs, promoting the art through cultural and tourism initiatives, and creating income opportunities for puppeteers—are essential to preserve this unique heritage while enhancing local employment and tourism development.

Keywords: Ambalangoda, Cultural Heritage, Puppet Art

SSH/PP/12

Hustle Culture: A Bane on the Maternity and the Long-Term Productivity of the Sri Lankan Economy

Jayakody JACP[1]

[1]*Department of English, Faculty of Arts, University of Colombo*

Background: For the past decade, the "hustle culture" – the lifestyle that consistently prioritises professional and/or academic commitments over one's personal needs – has become a prevalent phenomenon among youth in Sri Lanka, despite its negative impact on mental health issues surrounding maternity.

Objective: To examine the impact of the "hustle culture" on negative attitudes towards maternity and parenthood among Sri Lankan youth.

Methods: This cross-sectional study was conducted among school leavers, undergraduates, and fresh graduates currently residing in Colombo suburbs, using a structured, anonymous online survey distributed via Google Forms. Snowball sampling was used, whereby initial respondents were asked to share the survey link with others.

Results: The sample, with an average age of 23.2 years, comprised 111 students, of whom 64% (n = 71) were female and 36% (n = 40) were male. Results indicated that 79.2% (n = 88) of respondents were enrolled in an academic programme, and 30.6% (n = 34) of the respondents were enrolled in more than one academic programme. Out of those who are currently enrolled in academic programmes, 46.2% (n=42) of respondents were formally or informally employed part-time or full-time. Besides 60.5% (n=66) of respondents rated (0-5) the statement "I believe I should prioritise my studies/work over personal relationships at this stage to secure my future career." positively (3-5) (58.7%, n=64, $p<0.001$) Of respondents were uncertain or felt negatively about maternity and parenthood in the future due to the emphasis they have given upon their academic and professional lives.

Conclusion: The "hustle culture" mindset has had a significant negative impact on the youth's attitude towards maternity, with a potential decline in future birth rates in Sri Lanka. In this context, the country's dependency ratio is likely to be adversely affected, thereby placing Sri Lanka's economic productivity at risk. Hence, this issue should be readily addressed with the necessary economic and psychological support for youth.

Keywords: Hustle Culture, Productivity, Birth Rate

SSH/PP/13

A Content Analysis on the Portrayal of Men in the Film "Barbie"

Senadheera BN[1]

[1]*Department of Mass Communication, Faculty of Social Sciences, University of Kelaniya*

Background: The portrayal of gender in popular culture has become a prominent debate in the contemporary media landscape. A drawback of such debates is the imbalance of focus on gender as a whole, which favours more on the depiction of women. As the gender war in mass media is raging, it's timely to explore how men are portrayed in the light of the gender movement.

Objective: This study aims to examine how men and masculinity are represented in Barbie, with a particular focus on gender roles, power relations, and stereotypes.

Methods: Under the qualitative research approach, a content analysis was conducted using the film as the primary data and journal articles, books and blog posts as secondary data. Primary data was collected by watching the film repeatedly, focusing on the portrayal of men and masculinity. The film was segmented into three parts, focusing on their narrative significance to the story and characters. Scenes, dialogues, and overall narrative were analysed using a conceptual framework consisting of concepts from masculinity studies, the male gaze, and gender performativity. As for the secondary data, a critical comparison was conducted to identify the similarities, differences, and patterns that emerged.

Results: First, men are portrayed as insignificant beings without meaning inside the matriarchal Barbie world. Their journey to the real world reveals that men and masculinity have separate genesis as Ken adopts toxic masculine traits by performing according to his desired gender. The end brings the realisation that through gender performativity, men only add pressure on themselves, portraying men as victims of patriarchy rather than intentional oppressors. The film concludes, establishing Ken as the "New Man" in a post-feminist era, one who is capable of pursuing his own meaning.

Conclusion: Portraying the men in a matriarchal society as insignificant with no inherent meaning, the film holds a mirror back to the real-world women who are living in a patriarchal society and universalises the oppression in any gender based authoritarian system. Barbie explores a novel approach to understanding and guiding the discourse on men in the post-feminist reality.

Keywords: Gender studies, Masculinity studies, Feminist film

SSH/PP/14

Determinants of Low Male Participation in Rural Microfinance Programs: A Qualitative Study in Sri Lanka

Gamage SKN[1], Ekanayake EMS[1], Pabasara MKN[1], Niranjala SAU[1], Wijerathna WAID[1], Sumanapala SDA[1], De Silva PCS[2]

[1] *Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka, Mihintale*
[2]*Department of Accounting, Faculty of Management, KIU Campus, Sri Lanka*

Background: Microfinance is widely recognised for its role in women's empowerment and poverty reduction; however, limited attention has been paid to the low participation level of men and their impact on the long-term sustainability of the programs. In rural households, men play a significant role as decision-makers, income earners, and overall participants in economic activities. Therefore, a comprehensive, gender-inclusive approach is necessary to ensure that both men and women benefit from rural development, as addressing egalitarian participation gaps is crucial for the long-term success of microfinance programs.

Objective: To identify the underlying real-world factors behind lower male participation in microfinance programs.

Methods: Using an inductive approach, qualitative analysis was employed to gain a deeper understanding of the real experiences. Interviews were conducted with 12 microfinance participants in the Anuradhapura and Polonnaruwa districts. Thematic analysis was employed as the analysis tool.

Results: The research findings highlight five key factors affecting the lower male participation in microfinance: (1) Loan size and the nature of the business, (2) Regular group meetings, (3) Social and cultural ideas, (4) Gender based difficulties, (5) Policies of microfinance institutions. To address this aspect, microfinance organisations should restructure policies to include more males and females, offering inclusive lending opportunities. They should increase credit ceilings and provide non-strict repayment terms for men to participate in capital-intensive activities. Male participants should receive training in financial literacy, entrepreneurship, and business development. Institutions should target community leaders and decision-makers through awareness creation processes. Traditional group-based lending models should be replaced with flexible participation methods, promoting individual loans for men without compromising accountability and peer involvement.

Conclusion: This research explores the reasons behind lower male participation in microfinance programs, their impact on rural sustainable development, and suggests strategies to promote gender-balanced involvement.

Keywords: Gender Dynamics, Microfinance, Rural Sustainable Development

SSH/PP/15

Nature of Learning and Teaching the Agriculture Subject in the Sri Lankan School Curriculum

Sanjeewanie RBA[1]

[1]*Professional Development Centre for Teachers, Galenbindunuwewa.*

Background: Sri Lanka has an agro-based economy, and it is necessary to build a strong foundation through the curriculum to raise awareness among citizens regarding the main source of income.

Objective: This study was conducted to achieve four specific objectives. 1. To examine opportunities for accessibility for students 2. To examine the nature of the teaching process of the subject 3. To explore the challenges faced by teachers in implementing agricultural education. To provide recommendations for enhancing the quality and relevance of agricultural education.

Methods: This study used a qualitative, descriptive-interpretive design to explore teachers' experiences, perceptions, and practices in Agricultural education. Data were collected through semi-structured interviews with 15 subject expert teachers and through document analysis of research papers, teacher guides, and textbooks to triangulate findings and deepen contextual understanding.

Results: The agriculture subject is taught as an integrated subject in the primary level, as a basket subject in the junior secondary level, and as an elective subject in the senior secondary level, across all streams, excluding Mathematics. In the Biology stream, the probability of selection is 2/4. Other streams are offered as the third subject. Probability is 1/11. Textbooks are available only for grades 10, 11, and each consists of 190 pages. As the content is higher, teachers use only lecture methods and discussion. At the junior secondary and senior secondary levels, only 120 and 400 minutes per week were allocated.

Conclusion: The subject should be updated with modern technology to align with the world of work and students' expectations. Teachers should be equipped with modern technology and training. Agriculture should be a core subject from junior secondary level. Excessive time, resources, and training should be given.

Keywords: Integrated subject, Junior secondary, Subject stream, curriculum, elective subject.

Technology

Oral Presentations

TEC/OP/01

Determination of Traffic Density by Categorizing Different Types of Vehicles Using Machine Learning Techniques

Thilaksani R[1]

[1]*Department of Electrical and Electronic Engineering, Faculty of Engineering, University of Peradeniya*

Background: Urban traffic congestion presents a persistent challenge in modern cities, contributing to increased travel delays, fuel consumption, and environmental pollution. Accurate estimation of vehicle density is essential for effective congestion management and the development of smarter transportation systems.

Objective: This study proposes a real-time traffic density estimation approach using computer vision and machine learning techniques.

Results: Multiple pre-trained models, including You Only Look Once version 12 (YOLOv12), Convolutional Neural Network (CNN), K-Nearest Neighbors (KNN), and Mixture of Gaussians v2 (MOG2), were employed for vehicle detection and classification. A dataset of 9,000 labeled images collected from congested intersections in the northern region of Sri Lanka, representing ten distinct vehicle categories, was utilized. Of these, 8,000 images were used for training and 1,000 for testing. Background subtraction, object extraction, and vehicle counting methods were integrated to estimate traffic density.

The comparative analysis of model performance revealed that YOLOv12 achieved the highest classification accuracy of 98.0%, followed by CNN (95.0%), KNN (86.0%), and MOG2 (65.0%). YOLOv12 consistently demonstrated superior performance across varied traffic conditions and vehicle categories.

Conclusion: The findings confirm the effectiveness of deep learning–based computer vision systems for vehicle detection and density estimation. The proposed approach provides a scalable solution for congestion analysis, offering valuable insights for developing intelligent and efficient urban transportation strategies.

Keywords: Computer Vision, Intelligent Traffic Control, Machine Learning

TEC/OP/02

Analyzing Migration Factors of IT Professionals in Sri Lanka: A Gender-Based Comparison

Karandana LUS[1], Senarath SACL[1]

[1]*Department of Commerce & Financial Management, Faculty of Commerce & Management Studies, University of Kelaniya*

Background: The migration of highly qualified talent poses a serious difficulty in developing countries, and Sri Lanka's IT sector is increasingly becoming affected by it. While the IT sector contributes a considerable amount to GDP and delivers much of the innovation in a country, there is a high rate of outmigration with few studies looking at the differences in the reasons behind males and females migrating. Understanding the differences between male and female is critical to developing retention mechanisms.

Objective: To identify and compare the most influential push and pull factors shaping the migration intentions of male and female IT professionals from Sri Lanka.

Methods: A cross-sectional quantitative survey was collected using a structured online questionnaire distributed through snowball sampling. Data were collected from 336 Sri Lankan IT professionals working overseas comprised of 198 males and 138 females. Descriptive statistics and mean ranking analysis in SPSS were used to assess the relative importance/attractiveness of economic, political, social, and tech push and pull factors for migration.

Results: Study findings highlight clear differences between genders. For males, the most attractive push drivers were political instability (mean=3.99) and inflation (mean=3.86), while, for pull factors, it was relaxed working conditions (mean=4.25) and higher pay (mean=4.03). In contrast, female respondents reported work-life imbalance (mean=3.97) and inflation (mean=3.96) as the two most important push factors and reported perceived quality of life (mean=4.22), better pay (mean=4.09), and career advancement (mean=4.07) as more attractive pull factors.

Conclusion: Overall, the study supports research on the gendered reasons for IT migration from Sri Lanka. In general, males were influenced by political and economic stability, while females were more concerned with work-life balance, social supports, and career progression. These findings should be considered by policymakers, and industry leaders in Sri Lanka. Identifying strategies based on the needs of each gender, such as workplace flexibility to ensure working conditions are hospitable, tutelage on macroeconomic and political stability are integral to retaining talent and building a sustainable IT workforce.

Keywords: Gender, Information Technology, Migration

TEC/OP/03

Plant Mucilage as a Sustainable Coating for Improving Fresh Produce Storage Stability

Medawaththa DMGCM[1], Walisundara WMGCJB[1], Devindi RBA[1], Wijerathna MRM[1], Rathnayake RMDK[1], Rathnayake HA[1]

[1]*Department of Food Technology, Faculty of Technology, Rajarata University of Sri Lanka, Mihintale*

Background: If applied as an edible coating, plant mucilage may provide high tensile strength and barrier properties against different gasses thereby reducing the rate of softening and weight loss of coated produce.

Objective: This study assessed characteristics of various Sri Lankan plant mucilage and the potential use of selected mucilage as an edible coating to assess the storage stability of fresh produce.

Methods: Mucilage was extracted from various local plants such as okra, kehipiththan, hibiscus, aloe vera, kumbuk, dawul kurundu,chia seed, and fenugreek. Physicological characteristics of the extracted mucilage were evaluated. Fresh produce (Mango, Banana, Capsicum, Tomato); selected based on the rate of post-harvest loss during their season, were dipped in coating solutions with selected plant mucilage, such as Aloe Vera (AV), Okra (O), Aloe Vera: Glycerine in 80:20 (AVG), and Okra: Glycerine in 80:20 (OG). All the treated samples were stored under ambient conditions (25°C, 58% RH) for seven days. Physico-chemical parameters were monitored during storage in comparison with an uncoated sample.

Results: Results revealed that all the extracted mucilage samples exhibited pH values ranging from 4.1–5.8 and were soluble in warm water while insoluble in organic solvents. AV and OF showed moisture contents of 90.03% and 87.23% respectively, with drying losses of 98.73% and 98.20%, and TSS levels of 1.13% and 1.63%. Electrical conductivity was 2.531 ms/cm for AV and 4.498 ms/cm for Okra, with viscosities of 59.18 Centipoise and 120 Centipoise indicating superior flow behavior. AV coating enhanced the shelf life of mangoes and tomatoes by significantly ($p<0.05$) lowering total soluble solids and weight loss, treated tomatoes retained higher firmness, titratable acidity and lower a* and b* values representing lower ripening rate.

Conclusion: This study confirms that AV mucilage can be used as a natural, functional coating to reducing the rate of ripening of certain fresh produce such as tomato and mango.

Keywords: Aloe Vera; Fruits and vegetables; Okra; Post-harvest losses.

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Senior Professor, Department of Plant Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka

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Senior Lecturer, Department of Information Systems, Faculty of Management Studies, Rajarata University of Sri Lanka

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Professor in Family Medicine, Department of Family Medicine, Faculty of Medicine and Allied Health Sciences, Rajarata University of Sri Lanka

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Professor in Anatomy, Department of Anatomy, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka

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Professor in Biochemistry, Department of Biochemistry, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka

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Professor in Public Health, Department of Community Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka

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Professor in Microbiology, Department of Microbiology, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka

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Senior Lecturer and Honorary Consultant Paediatrician, Department of Paediatrics, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka

Dr. R M I S K Senevirathna
Senior Lecturer, Department of Biochemistry, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka

Dr. M G R S S Gunathilaka
Senior Lecturer, Department of Microbiology, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka

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Senior Lecturer and Honorary Consultant Physician, Department of Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka

Dr. J M D D Jayasundara
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Dr. R D N C Sarathchandra
Senior Lecturer and Honorary Consultant Physician, Department of Medicine, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka

Dr. H E C S Kumara
Senior Lecturer, Department of Physiology, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka

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Senior Lecturer, Department of Parasitology, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka

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Senior Lecturer and Honorary Consultant Paediatrician, Department of Paediatrics, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka

Dr. H B D Jeewantha
Senior Lecturer in Anatomy, Department of Anatomy, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka

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Lecturer, Department of Physiology, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka

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Professor, Department of Economics, Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka

Prof. P B N Abeywardana
Professor, Department of Archaeology and Heritage Management, Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka

Prof. C R Withanachchi
Professor, Department of Archaeology and Heritage Management, Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka

Prof. E M S Ekanayaka
Professor, Department of Social Sciences, Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka

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Professor, Department of Environmental Management, Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka

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Professor, Department of Environmental Management, Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka

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Senior Lecturer, Department of Economics, Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka

Mr. H G K N Bandara
Senior Lecturer, Department of Economics, Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka

Mr. H A B W Hettiarachchi
Lecturer, Department of Economics, Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka

Mr. N D T M Siriwardhana
Senior Lecturer (Transitional), Department of Archaeology and Heritage Management, Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka

Ms T M C D Senarathna
Senior Lecturer, Department of Social Sciences, Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka

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Senior Lecturer, Department of Environmental Management, Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka

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Senior Lecturer, Department of Environmental Management, Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka

Dr. M G N Dayanada
Senior Lecturer, Department of Languages, Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka

Dr. M A P Kumara
Senior Lecturer, Department of Humanities, Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka

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Senior Lecturer, Department of Humanities, Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka

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Senior Lecturer, Department of Humanities, Faculty of Social Sciences and Humanities, Rajarata University of Sri Lanka

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Mr. A P Mallawaarachchi
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Professor, Department of Geography, Faculty of Social Sciences, University of Kelaniya, Sri Lanka

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Head, Inland Aquatic Resources & Aquaculture Division (IARAD), National Aquatic Resources Research & Development Agency (NARA), Sri Lanka

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Senior Lecturer, Department of Mathematics, Faculty of Science, University of Ruhuna, Sri Lanka

Dr. N Rodrigo
Senior Lecturer, Department of Mathematics, Faculty of Science, University of Peradeniya, Sri Lanka

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Director, Mineral Surveys, Geological Survey and Mines Bureau, Sri Lanka

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Senior Lecturer, Faculty of Applied Sciences, Uva Wellassa University, Sri Lanka

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Senior Lecturer, Department of Statistics, Faculty of Applied Sciences, University of Sri Jayewardenepura, Sri Lanka

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Senior Lecturer, Department of Mathematics, Faculty of Science, University of Peradeniya, Sri Lanka

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Department of Statistics and Computer Science, Faculty of Science, University of Peradeniya, Sri Lanka

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Senior Lecturer, Department of Human Resource Management, Faculty of Commerce and Management Studies, University of Kelaniya, Sri Lanka

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Dr. Menuka Udugama
Senior Lecturer, Department of Agribusiness Management, Faculty of Agriculture and Plantation Management, Wayamba University of Sri Lanka

Dr. Mahesh Hordagoda
Senior Lecturer, Department of Mechanical Engineering, Faculty of Engineering, University of Moratuwa, Sri Lanka