



Annual Research Session 2023

International Conference on Emerging Trends in Health-Care Sciences

BOOK OF ABSTRACTS



11TH JULY 2023

FACULTY OF HEALTH-CARE SCIENCES, EASTERN UNIVERSITY. SRI LANKA
ARUNAI INTERNATIONAL RESEARCH FOUNDATION. INDIA



Annual Research Session 2023
International Conference on Emerging Trends
in Health-Care Sciences

Book of Abstracts

Organized by
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Message from the Vice Chancellor



It gives me great pleasure to extend my warmest greetings and announce the Annual Research Session will be held on 11th July 2023 organized by the Faculty of Healthcare Sciences at our esteemed university. As the Vice-Chancellor, it is my honour to invite you all to this significant event, which will be a showcase of our collective intellectual prowess and dedication to advancing healthcare research.

Conferences play a vital role in the academic and professional development of universities. They provide a platform for researchers, scholars, and students to share their knowledge, present their research findings, and engage in intellectual discussions. Conferences bring together experts and researchers from various fields, offering a unique opportunity for knowledge exchange. Participants can learn about the latest research, advancements, and trends in their respective disciplines, thus expanding their knowledge base.

The title for this year's Annual Research Session is “Emerging Trends in Health-Care Sciences” and the theme of the conference is “Moving towards Wellness and Integrity in an unstable world”.

I encourage you to submit your research abstracts and papers aligned with this theme, focusing on emerging trends, novel interventions, and interdisciplinary approaches within the healthcare domain. This is an excellent opportunity to showcase your research endeavours, receive valuable feedback from esteemed peers, and forge new collaborations with fellow researchers and professionals.

Non-Communicable Diseases (NCDs) are a global health concern, and understanding the contemporary world in relation to NCDs and world trends is crucial for universities and healthcare professionals. Incorporating knowledge about the contemporary world for NCDs and world trends into educational curricula, particularly in medical and public health programs, ensures that future healthcare professionals are equipped with up-to-date information and skills to address the challenges posed by NCDs globally.

Conducting joint conferences with global organizations offers numerous benefits to universities and their stakeholders. Joint conferences with global organizations provide universities with international exposure and enhance their reputation. Collaboration with renowned organizations demonstrates

credibility and attracts participants from diverse backgrounds, fostering a global perspective in research and academic endeavours.

In addition to the presentation of research papers, the Research Session will also feature keynote addresses from distinguished speakers who are at the forefront of healthcare sciences. Their insights and expertise will undoubtedly enrich our understanding of the contemporary challenges and future directions in the field.

I encourage active participation from all faculty members, researchers, and students, as your presence and contributions are integral to the success of this event. This opportunity to strengthen our research community, nurture a culture of innovation, and pave the way for future breakthroughs in healthcare sciences.

Thank you for your unwavering dedication to excellence in healthcare research, and I am confident that this Annual Research Session will be an enlightening and inspiring event for all.

Prof. Vallipuram Kanagasingam
Vice Chancellor
11.07.2023

Message from the Dean of the Faculty

“The greatest wealth is health.” — Virgil



On behalf of the Faculty of Health-Care Sciences (FHCS) of Eastern University, Sri Lanka, I am delighted to welcome all presenters and participants to the Annual Research Session 2023- International Conference on Emerging Trends in Health-Care Sciences with the theme “Moving Towards Wellness and Integrity” scheduled to be held at FHCS, EUSL Pillayarady on 11th July 2023. This year, the conference is organized in collaboration with Arunai International Research Foundation, India.

Research-oriented education is always a sign of development and learning. It helps society to create something novel. Innovative thinking is pertinent to cope with new changes and the latest trends. This conference provides a forum for scholarly discussion for exploring and searching various aspects of healthcare.

This conference aims to provide a unique opportunity for researchers, policymakers, and development practitioners to address some of the challenges towards seeking new solutions.

Today, the world is changing at a fast pace, and the borders between countries are becoming almost non-existent. The problems occurring in society are more complex than those in the past. To solve these problems, we need a multidisciplinary approach on a global scale. This is evident in the existence of this Conference, and it is also clearly apparent in the collaboration that is already taking place among nations around the world, especially among the countries of the Association of Southeast Asian Nations.

I hope that this unique international and multidisciplinary conference will provide our participants with a truly transformative experience through a variety of knowledge and perspectives so that the complex problems in our society can be solved.

I sincerely offer my earnest gratitude to those who have contributed through their keynote addresses and research papers at the conference. I am sure that

the conference would achieve its objective by providing a suitable platform for learning and experiencing in Health-Care. The cohesive efforts of a dedicated and committed team become necessary for organizing such conferences. We are fortunate enough for having such a hardworking team with us. I wish for the grand success of the conference. Best Regards,

Dr. T. Sathaanathan

Dean, FHCS

11.06.2023

Message from the Chairperson



As the chairperson of the conference, together with the organising team, I am proud to present the Annual Research Session, FHCS 2023 as the **International Conference on Emerging Trends in Healthcare Sciences** in collaboration with the Arunai International Research Foundation, India. The conference is held under the theme of *“Moving towards wellness and integrity in an unstable world”* on 11th July 2023 at the Faculty of Health-Care Sciences, Eastern University, Sri Lanka. The ARS FHCS 2023 aims at expanding the vision

of healthcare in all aspects such as current trends in basic sciences, prevention of communicable and non-communicable diseases, patient care, laboratory technologies and healthcare professions.

I am also particularly excited about the upcoming presentations from the eminent keynote speakers and invited speakers. Moreover, for the first time in the history of ARS FHCS, we introduce the emerging scientists from our faculty to present to us their research highlights. As of the past few years, this time too we have arranged for a hybrid mode of presentation and participation. We received about 30 papers in all and after review, twenty-three papers have been selected for presentation.

The past couple of years have undoubtedly tested our collective resilience and showcased the crucial role of healthcare in safeguarding the human race. We have witnessed remarkable advancements, heroic efforts, and innovative discoveries that have redefined the way we perceive and approach healthcare. Now, more than ever, we are called upon to embrace change, adapt to new circumstances, and lead the way towards a more stable and sustainable future.

The hard work and dedication of all the members of the organizing, editorial, media, advisory, scientific, technical and financial and event management committees during the preparation for this conference is highly commendable. I am much grateful to Prof. V Kanagasigam, Vice-chancellor EUSL and Dr T Sathaanathan, Dean/ FHCS for their support and guidance. I am much obliged to all reviewers, session chairpersons, panel members and the judges of the panels for their immense backing. Our appreciations and acknowledgement to the university administration for their timely support and continuous follow-up, which make this conference a success.

Most of all, I thank all the presenters and participants, for enriching these annual research sessions with your presence. I hope you will enjoy the content of the conference, get new ideas, and above all, have a good time.

Thank you.

Dr Rajavarthani Sanjeev

Chairperson

Annual Research Session 2023

Faculty of Health-Care Sciences

Eastern University, Sri Lanka

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Abstracts of Keynote Address

Keynote Address

**Medical Education in a changing world: The role of
Self Directed Learning**



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Abstract: Our world is constantly changing, often in unpredictable ways, and our doctors of the future need to be able to navigate these changes adapt their practice in an unpredictable changing world. Never was this truer than in the recent pandemic, where much of our health service and our health education underwent emergency remote pivoting. Medical education has a key role in supporting our future doctors to recognise and evaluate changes, adapting and gaining the skills and knowledge required both during changing contexts and as we settle into ‘new normals’. This talk explores the theory of self-directed learning and how it can be utilised as a powerful approach in supporting learners in an unstable and rapidly changing world. Examples are drawn from undergraduate and postgraduate curricula and how this is applied in practice. An invitation to consider where this approach is currently used in the audience’s own context is made and how this might be developed to strengthen medical education into the future.

Keynote Address

**Promoting research in resource-poor Contexts:
The Role of Universities**



Prof Kosala Marambe
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Abstract: The Oxford English dictionary defines Research as ‘the systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions’. A wider definition of research is ‘a disciplined inquiry aimed at finding information, exploring facts, and find answers to problems at hand’. In low resource settings, finding context-specific as well as cost-effective solutions to day-to-day problems through primary and secondary research is inevitable. Hence, research become an important partner in overall development of a given system, be it health or otherwise.

Research is one of the key functions of a University. The global ranking of a University depends to a large extent on its research output of staff and students, and the innovations. Today’s employees are required to demonstrate attributes such as critical thinking, problem solving, communication, collaboration, independence, time management and paying attention to detail. These transferable skills could be better harnessed through training in research.

Research training is an important component in Undergraduate education, especially in honours degrees. Hence, curricula of study programmes, generally

incorporate training in research methods, ethical conduct of research and dissemination of knowledge through communication, including publications.

However, in resource-poor settings, the common challenges for research are financial pressure, sub-optimal healthcare delivery, underdeveloped infrastructure, paucity of knowledge, and human resource limitations. These could be resolved by developing and strengthening partnerships with regional and global centres of excellence. Such measures could produce immense mutual benefits and lead to development of a research culture. Thus, Universities and Higher Educational Institutes should consider providing opportunities to undergraduate and postgraduate students to engage in research as part of the curriculum or providing more opportunities for them to participate in research projects conducted through different entities.

In a dialogue focusing on emerging trends in healthcare, both quantitative and qualitative research play an important role in ensuring wellness and integrity. While quantitative research lead to finding associations, cause-result relations, and developing innovations, the qualitative research help in addressing the grass-root issues with context-specific solutions. Thus promoting a wide range of research approaches among students and academia is highly relevant in health sciences education and human capital development.

Keynote Address

Nutritional challenges to alleviate type 2 diabetes



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Abstract: Type 2 diabetes, a chronic metabolic disorder, has developed a global health apprehension in contemporary years. It is pigeonholed by hyperglycemia due to diminished insulin sensitivity, scanty insulin production and/or the inability of the body to efficiently deal with insulin. This form of diabetes is often associated with lifestyle factors such as poor diet, sedentary behaviour, and obesity. Nutritional challenges play a substantial part in the progress, control, and deterrence of T2D. While genetic and lifestyle factors augment its development, nutritional challenges enact a momentous role in managing and preventing T2D.

One of the principal nutritional challenges encountered by individuals with T2D is sustaining a balanced diet composition. Carbohydrates, particularly those with a high glycemic index (GI), can cause swift spikes in glycemic levels. Thus, it is decisive to line up complex carbohydrates such as whole grains, legumes, and vegetables over simple carbohydrates like refined sugars and processed foods.

These complex carbohydrates are rich in fibre, which assists in regulating blood sugar levels and stimulating satiety.

Another weighty phase is practising portion control and espousing a well-balanced plate approach. T2D individuals can ensure they consume appropriate amounts of carbohydrates, lean proteins, and healthy fats. Managing portion sizes is essential to prevent excessive calorie intake and maintain stable blood sugar levels. Consuming larger portions can lead to weight gain, insulin resistance (IR), and exacerbation of diabetes symptoms.

Furthermore, it is essential to focus on nutrient-dense foods while limiting the intake of foods with little nutritional value. i.e., the quality of food choices is critical for individuals with T2D. A diet rich in fruits, vegetables, lean proteins, and healthy fats promotes overall health and aids in T2D management. Conversely, a diet high in saturated and trans fats, processed foods, and sugary beverages can deteriorate IR and boost weight gain.

Generally, a combination of regular physical activity and a well-balanced, calorie-controlled diet is acclaimed to combat such a modified lifestyle causing disease. However, individuals with T2D may face challenges in balancing their nutritional needs with their physical activity levels. Proper fuelling before and after a workout is crucial to maintain energy levels and avert hypoglycemia. A healthcare professional or registered dietitian can guide you in setting appropriate calorie goals and developing personalized meal plans. Additionally, diabetes management requires careful consideration of the GI of foods.

In supposition, T2D presents various nutritional challenges that require careful management. Adopting a balanced diet, monitoring carbohydrate intake, managing weight, avoiding processed foods, considering associated health conditions, and finding support are all crucial aspects of positively circumnavigating these challenges. With a pre-emptive slant to nutrition and lifestyle changes, individuals with T2D can progress their overall health and competently manage their ailment.

**Abstracts of Emerging
scientists' forum**

Emerging scientists' forum

Fostering Flipped Classroom Pedagogy in Undergraduate Nursing Education

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Background: The nursing education system has evolved with an increased emphasis on student-centred education, such as implementing Flipped Classroom Pedagogy. Given the promising positive educational outcomes, the trend of using FCP has become increasingly popular in undergraduate nursing education. However, little is known about how these flipped classroom methods impact on nursing educational practices in limited-resource settings situated in South Asia.

Objective: To foster flipped classroom pedagogy (FCP) and assess its feasibility in the context of undergraduate nursing education in Sri Lanka.

Method: A multi-method approach was undertaken to incorporate a systematic review, psychometric analyses, surveys, focus group interviews (FGIs), educational design, and an intervention-based study. More specifically, the approach included: reviewing and appraising the literature to identify pedagogical models for developing FCP; creating a scale for measuring the readiness of FCP; assessing the feasibility of FCP; developing a web-based educational intervention for promoting FCP; and implementing the educational intervention and assessing its educational impact.

Results: The systematic review indicated that FCP leads to positive educational outcomes in undergraduate nursing education. Furthermore, it revealed promising instructional system designing models that could be used for adapting or developing a FCP programme. The psychometric study showed the development and validation of a four-factor scale for measuring nursing students' readiness for the flipped classroom. Surveys and FGIs illustrated that students and teachers were ready to utilise the FCP after receiving introductory training. Moreover, the study revealed that the provision of technological resources and existing teacher-centric practices were major challenges when

implementing FCP. The educational design-based study demonstrated an effective way for developing an educational website and learning materials for promoting FCP. In addition, the design of the educational website and its learning materials were favourably reviewed by an international panel of experts. Finally, the evaluation study revealed that the web-based educational intervention conducted for promoting FCP resulted in demonstrable learning gains. These educational gains included knowledge gains, increased motivation from the web-based educational intervention, and transfer of learning into the teaching-learning practice. The transfer of learning was evident two months after the web-based educational intervention.

Conclusion: Overall, the study explored an innovative and promising approach for comprehensively evaluating the efficacy of FCP in the context of undergraduate nursing education in Sri Lanka, and provided educational measurement methods that could be used to assess the feasibility of FCP. This study design will be useful for evaluating the design, development, and promotion of FCP in undergraduate nursing education. The study further provides foundational information for initiating FCP in the Sri Lankan nursing education context. Therefore, future studies could incorporate this holistic study design to further evaluate the implementation and utility of FCP in undergraduate nursing curricula worldwide.

Emerging scientists' forum

Effectiveness of the Champions for skin integrity model to facilitate the uptake of evidence-based practice in DFU care among healthcare professionals in Sri Lanka

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Aim: The aim of the study was to determine the effectiveness of the adapted Champions for Skin Integrity (CSI) model to facilitate the uptake of evidence-based practice (EBP) in diabetic foot ulcer (DFU) care among healthcare professionals in two hospitals in Sri Lanka.

Design: A pre-post longitudinal study design

Methods: The CSI model of wound care was previously developed based on robust guideline dissemination and implementation strategies to transfer evidence into practice. The model demonstrated the value and capacity to facilitate the uptake of EBP. In this study evidence translation strategies and resources used in the CSI model were adapted to the Sri Lankan healthcare context to facilitate the uptake of EBP in DFU care. Data were obtained pre and post intervention through healthcare professional surveys, semi-structured interviews and foot care audits.

Results: Surveys from healthcare professionals from surgical wards in two hospitals were completed pre (n=81) and post (n=69) intervention. In total, 102 skin integrity audits and 20 semi-structured interviews were completed pre and post intervention. Bivariate analysis and thematic analysis identified a number of evidence-based DFU care strategies as well as confidence in evidence-based strategies were significantly increased following the implementation of the adapted CSI model of wound care.

Conclusions: These results have shown that the model can successfully be adapted in the Sri Lankan context where the increase in EBP in regard to DFU care is likely to lead to improved patient outcomes.

Keywords: Diabetic foot ulcer, Champions for Skin Integrity model, implementation, evidence-based practice

Abstracts of Presented Original Research Work

FP 1

Abstract No. ARS-FHCS-2023-003

Characteristics and outcomes of patients admitted with an ST elevation myocardial infarction, who underwent thrombolysis with Tenecteplase at the Teaching Hospital Batticaloa

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ABSTRACT

Background: Ischemic heart disease (IHD) is a major cause of death worldwide, accounting for 16% of deaths according to the World Health Organization. It is also the leading cause of hospital deaths in Sri Lanka. Risk factors for (IHD) include both non-modifiable factors such as advanced age and male gender and modifiable factors like diabetes, hypertension, and smoking. Major adverse cardiovascular events (MACE) is a composite endpoint for measuring the long-term impact of IHD. Tenecteplase is used for acute management of ST Elevation Myocardial Infarction (STEMI), for patients in non-PCI (Percutaneous Coronary Intervention) capable hospitals. The Teaching Hospital Batticaloa is such a setting where Tenecteplase is used in acute management.

Objectives: To study selected characteristics and outcomes of patients admitted with an ST Elevation Myocardial Infarction, who underwent thrombolysis with Tenecteplase at, Teaching Hospital Batticaloa and to determine the association of selected characteristics to the outcomes of these patients.

Method: The study was a retrospective analysis of patients with ST elevation myocardial infarction who underwent thrombolysis with Tenecteplase at the Teaching Hospital Batticaloa. The study population included patients admitted with ST Elevation Myocardial Infarction from 1st August 2021 to 1st August 2022 and managed at the hospital's Coronary Care Unit (CCU), while excluding

patients who didn't meet the inclusion criteria. The study was conducted from March 2022 to January 2023. The sample size was a complete enumeration. Data was collected from the record books of patients maintained at the CCU. The data were manually extracted and entered into an Excel data sheet for analysis using the Statistical Package for Social Studies.

Results: This study analysed 165 patient records from the Coronary Care Unit of the Teaching Hospital Batticaloa. The majority of patients fell between the ages of 41-60 (48.5%), with a mean age of 56.88 years. Most patients were male (72.7%) and Tamil (65.5%). Various risk factors were observed, including smoking (43.6%), alcohol consumption (29.1%), diabetes (46.7%), hypertension (49.1%), and obesity (3.6%). A significant portion of patients had a family history of ST elevated myocardial infarction (14.5%). The most common presentation was inferior STEMI (43.6%), followed by anterior STEMI (34.5%). Thrombolysis was successful in 62.4% of cases, and 37.6% were unsuccessful. Left ventricular impairment was observed in different degrees, with 37% having a low ejection fraction (EF), and 31.5% having a borderline or preserved EF. Most patients did not experience major adverse cardiac events (MACE) (91.5%), but some experienced cardiovascular death (7.3%) and non-fatal stroke (1.2%). Other complications included ventricular tachycardia/arrhythmia (6.7%), cardiogenic shock (15.8%), pulmonary oedema (4.2%), major bleeding (3%), and minor bleeding (19.4%).

Conclusion: The study analysed the associations between patient characteristics and outcomes. However, statistically significant associations were only found between age and major adverse cardiac events, while other characteristics did not show significant associations with the outcomes.

Keywords: STEMI, Tenecteplase, MACE, Smoking, DM, Hypertension

FP 02

Abstract No. ARS-FHCS-2023-004

A study on practices of antibiotic prescription among doctors in medical and surgical wards of Teaching Hospital Batticaloa

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ABSTRACT

Background: Antibiotic resistance refers to the unresponsiveness of a microorganism to an antibiotic drug. An occasion where antibiotics are used, contributes to antibiotic resistance. So, doctors must be concerned about both the benefit to the patient and the risk of antibiotic resistance while prescribing antibiotics.

Objectives: To describe antibiotic prescription practices among doctors in the medical and surgical wards of Teaching Hospital Batticaloa.

Methods and materials: Descriptive, cross-sectional study, was conducted using a questionnaire via Google form. Variables were analyzed using SPSS.26

Results: A total of 68 doctors out of 90 doctors from the medical and surgical wards of Teaching Hospital Batticaloa participated in the study and 67.64% of them adhere to guidelines while prescribing antibiotics. The majority (89.3%) adhere to National Guidelines. 30.88% of responders request bacterial cultures before starting empiric antibiotic therapy frequently, and 80.6% find getting the culture bottles on time difficult. Though 98.5% of participants shift from empiric to targeted therapy according to culture report, only 19.1% shift from empiric to targeted therapy if the patient clinically responds to empiric therapy.

Discussion and Conclusion: The majority of the participants adhere to guidelines and National guidelines are used mostly. Shortage of drugs and culture bottles is a major concern while prescribing antibiotics. Although most of the participants switch from empiric to targeted antibiotic therapy according to the culture report, the majority of the doctors do not shift, if the patient is clinically responding to empiric antibiotic therapy. This indicates a higher

chance of patients being on highly potent broad-spectrum empiric antibiotics for a longer duration. These issues need to be addressed by the relevant authorities to facilitate rational prescription of antibiotics.

Keywords: Antibiotics, Guidelines, Doctors, Culture, Challenges, Empiric

FP 3

Abstract No. ARS-FHCS-2023-003

Assessment of knowledge and practice regarding pediatric oral drug administration among primary caregivers in pediatric wards of Teaching Hospital Batticaloa

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ABSTRACT

Background: Children are different from adults as they are not taking medicines by themselves. Medications have to be administered by primary caregivers to children. Insufficient knowledge of medication administration in primary caregivers has resulted in countless adverse drug events in children. Further, medication errors and unfavourable consequences can be prevented by correct drug administration.

Objective: This study aimed to assess the knowledge and practice regarding pediatric oral drug administration among primary caregivers in pediatric wards of Teaching Hospital Batticaloa.

Method: A descriptive cross-sectional study was carried out in pediatric wards at Teaching Hospital, Batticaloa among primary caregivers of children. Participants were selected by using simple random sampling. After obtaining informed written consent, data were collected using a pre-tested interviewer-administered questionnaire. Ethical clearance was obtained from the Ethics Review Committee, Faculty of Health-Care Sciences, Eastern University, Sri Lanka (E/2022/19).

Results: A total of 260 respondents were interviewed of which 95.4% were mothers. The majority (72.3%) of respondents had moderate knowledge regarding pediatric drug administration. Nearly half (57.3%) of the respondents had a moderate level of practice. Only 40.8% of respondents were practising correct drug administration. Chi-square tests revealed a significant association

between knowledge and practice in certain aspects such as breaking the tablets, dissolving the tablets, using alternate dosage forms when the child refuses, using correct drug administration tools, breaking the tablets, giving half tablets, liquid medication usage, correctly following the instruction, disposal of remaining medication. This finding indicates that there is a gap between knowledge and practice among primary caregivers regarding pediatric oral drug administration.

Conclusion: Knowledge and practice regarding pediatric oral drug administration among the primary caregivers were moderate in this study population. Despite having adequate knowledge, this study shows that primary caregivers don't practice drug administration based on their knowledge level.

Keywords: Knowledge, practice, pediatric, drug administration, Primary caregiver

FP 4

Abstract No. ARS-FHCS-2023-012

Indwelling time, complication and factors associated with open peripheral intravenous cannulation in adult patients admitted to Teaching Hospital Batticaloa

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ABSTRACT

Background: Peripheral intravenous cannulas (PIVCs) are commonly used medical devices in hospital settings. Complications related to PIVC insertion, duration of use, and removal have been reported in various studies. Although different technologies and practices are followed worldwide for PIVC procedures, there is a lack of research focusing on the current practices and gaps in Sri Lanka. Therefore, the objective of our study was to investigate the duration of indwelling time, and the occurrence of complications, and identify the associated risk factors in this context.

Objective: To provide a comprehensive overview of the existing evidence regarding the duration of indwelling, complications, and the associated factors of open peripheral intravenous cannulation in adult patients admitted to Teaching Hospital Batticaloa (THB).

Method: A Cross-sectional descriptive observational study was conducted from February to December 2022 in 388 adult patients who had peripheral intravenous cannulation during hospitalization at medical and surgical wards in THB. The SPSS26 was used for analyzing and interpreting the data.

Results: The mean indwelling time for peripheral intravenous cannulas (PIVC) was 61 hours and 25 minutes (± 25.58 hours) with a range of 4 to 141 hours. Chi-square test analysis revealed several factors associated with a shorter indwelling

time, including the hospitalized unit in surgical wards ($p=0.01$), unhealthy BMI ($p=0.001$), smoking ($p=0.009$), alcohol consumption ($p=0.000$), and usage of anti-emetic injections ($p=0.050$).

The majority of participants ($n=339$, 87.4%) had their cannulas removed due to complications. Among them, more than half experienced occlusion and obstruction ($n=197$, 58.1%), followed by phlebitis ($n=75$, 22%), accidental removal or dislodgement ($n=33$, 9.7%), seepage and leakage ($n=20$, 5.9%), and infiltration ($n=14$, 4.1%).

Significant factors associated with complications included the site of insertion on the dorsum of the hand ($p=0.026$), cannula gauge of 20G ($p=0.000$), ringer lactate infusion ($p=0.05$), use of the cannula for administering maintenance fluids ($p=0.014$), use of normal saline infusion ($p=0.004$), corticosteroid administration ($p=0.05$), and the age of the participant ($p=0.046$).

Conclusion: Open peripheral intravenous cannulation (PIVC) is associated with a high occurrence of complications among the participants. Therefore, there is a need to improve cannulation practices and consider replacing open PIVCs with closed PIVCs.

Keywords: Indwelling time, Open peripheral Intra-venous cannula, Complications, Adult patients, Risk factors, Phlebitis

FP 5

Abstract No. ARS-FHCS-2023-006

Impact of nausea and vomiting in the health-related quality of life in antenatal mothers attending the selected antenatal clinics in Batticaloa MOH area

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ABSTRACT

Background: Pregnancy, a fundamental physiological process, is vital for the existence of humankind, as well as a period of transition with important anatomical, physiological, and emotional changes. Nausea and vomiting are known to be common minor disorders that occur during pregnancy. But they cause a significant change in the Health-Related Quality of Life (HRQoL) of pregnant mothers by affecting the physiological, psychological, and social aspects of the life of pregnant women.

Objective: The purpose of this study was to assess the impact of nausea & vomiting on the HRQoL in antenatal mothers, attending the selected Antenatal Clinics (ANC) in the Batticaloa Medical Officer of Health (MOH) area

Method: A cross-sectional analytical study was conducted among 377 antenatal mothers, attending selected antenatal clinics. After obtaining written consent, data were collected as a complete enumeration through a pre-designed and pre-tested interviewer-administered questionnaire. Statistical Package of Social Science 22 was used for entering, analyzing and interpreting the data. Descriptive statistics were performed to describe the Health-Related Quality of Life in pregnant women.

Results: The majority had average HRQoL (n=178, 47.2%) while 36.6% (n=138) had higher than average HRQoL and 10.9% (n=41) of them had lower than

average HRQoL. Only 5.3 % (n=20) of them had a much higher than average HRQoL, and none had a much lower than average HRQoL.

Conclusion: NVP cause significant changes in the HRQoL of antenatal mothers

Keywords: Antenatal mothers, NVP, HRQoL

FP 6

Abstract No. ARS-FHCS-2023-009

Association between knowledge of maternal nutrition and sociodemographic factors and, dietary practices among pregnant mothers attending antenatal clinics in the Chenkalady MOH area

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ABSTRACT

Background: Pregnancy is a constructive metabolic process and women's normal nutritional requirement increases during pregnancy to meet the needs of the growing foetus and the maternal tissues. Knowledge of maternal nutrition and good dietary practice can lead to a good pregnancy outcome.

Objectives: The aim of the study is to identify the association between maternal nutritional knowledge with sociodemographic factors and dietary practices among pregnant mothers attending antenatal clinics in the Chenkalady MOH area.

Methods: A community-based descriptive cross-sectional study was conducted in selected antenatal care clinics of the MOH area, Chenkalady. A structured interviewer-administered questionnaire was used to collect the data. Statistical Package of Social Science-25 was used to interpret the data. Descriptive analysis was employed to calculate frequency and percentage and the Chi-Square test was used to calculate the significance.

Results: More than 80% of the participants had a moderate or good level of knowledge. Occupational status and number of pregnancies were significantly associated ($p < 0.05$) with knowledge level. There were significant associations

between dietary practices and knowledge of maternal nutrition in the following aspects: knowing the importance of folic acid and pre-conceptual folic acid supplement consumption, and overall dietary practice and overall knowledge of nutrition. Significant associations were found between dietary practices and socio-demographic factors in certain aspects such as age with frequency of meals, fruit consumption and overall dietary practice, educational status with fruit and vegetable consumption and duration of pregnancy with folic acid consumption. Only 2.5% expressed poor dietary practices

Conclusion: The majority of the respondents have a satisfactory level of knowledge and good practices regarding maternal nutrition in this study area. Intensified health educational programmes on maternal nutrition and dietary practices would help for further improvement of the health status of mothers for better pregnancy outcomes.

Keywords: Antenatal Clinics, Dietary Practices, Knowledge of Maternal Nutrition, Pregnant Mothers

FP 7

Abstract No. ARS-FHCS-2023-011

Knowledge, attitude and practice towards dietary modifications among type 2 diabetes mellitus patients following medical clinics at Teaching Hospital, Batticaloa

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ABSTRACT

Background: Diabetes mellitus (DM) contributes to nearly 1.5 million deaths annually. The World Health Organization declared that the prevalence of DM has been rising more rapidly, from 108 million in 1980 to 422 million in 2014. In Sri Lanka according to a local study done in 2005, the prevalence of type 2 diabetes mellitus is 14.2% among males and 13.5% among females. At present, one in 12 adults in the country suffers from DM, which is 1.16 million. High caloric intake and lack of physical activity are the main contributing factors of type 2 diabetes mellitus and the principal targets of intervention. Researching the knowledge, attitude and practice related to dietary modification helps to bridge the gaps and reduce the complications and mortality related to Type 2 DM.

Objective: To assess the basic knowledge, attitude and practice (KAP) towards dietary modifications among diabetes mellitus patients.

Method: A descriptive cross-sectional study was conducted among patients with type 2 diabetes mellitus attending the medical clinic at Teaching Hospital Batticaloa (THB). After obtaining informed written consent from the volunteer participants, a properly validated questionnaire was used. Data were collected from relevant study settings and analyzed using Statistical Package of Social Sciences (SPSS) version 24. The ethical approval was obtained from the Ethics Review Committee, Faculty of Health-Care Sciences, Eastern University, Sri Lanka.

Results: In our study, 41% of the participants were between the age group of 51-60. Among the participants, 67.6% were female. 50.5% of the patients were educated up to the secondary level. 66 (31.4%) were having DM for more than 10 years. 34.3% of the respondents were following the clinic for 1-5 years. This study reveals, that the knowledge (96.24%), attitude (76.7%) and practice (63.8%) towards dietary modifications among the participants following the medical clinic at THB is good.

Conclusion: Results of this study expressed that there is a gap between the knowledge and attitudes/practices of the patients. This gap between KAP calls for locally modified diabetes education programs and suitable dietary styles from the stakeholders to improve overall well-being and outcome of diabetes in the patients.

Keywords: Knowledge, Attitude, Practice, Dietary modification, Type 2 DM, Teaching Hospital Batticaloa.

FP 8

Abstract No. ARS-FHCS-2023-015

Patterns, knowledge, attitudes and factors associated with blood donation among Faculty of Health-Care Sciences undergraduates

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ABSTRACT

Introduction: Blood donation is a vital practice in ensuring a safe and adequate supply of blood. It enables blood transfusion activities to be carried out without interruption in order to ensure adequate improved patient survival in the instances such as surgery, trauma and cancer. In Sri Lanka, blood donation is carried out through 100% voluntary non-remunerated blood donors. As there is a global decline of voluntary non-remunerated blood donors, this study was carried out to identify the potential challenges and to suggest solutions to ensure voluntary blood donation among the undergraduates of the Faculty of Health-Care Sciences, Eastern University, Sri Lanka.

Materials and methods: A descriptive cross-sectional study was carried out among the undergraduates of the Faculty of Health Care Sciences. A non-random voluntary sample method was used to select our study sample of 416 considering the non-responding participants. Responses were obtained through an online self-administered questionnaire. Data were analysed using SPSS software. A p value less than 0.05 was considered statistically significant.

Results: Highest number of participants belong to the age category of 24 – 26. The majority were Sinhalese (69.06%) and Buddhists (64.26 %). Overall knowledge of blood donation was 51%. The majority were non-blood donors, while willing to donate in future (92%). A good attitude was observed among 76% towards blood donation. There was a statistically significant association found between being a blood donor or a non-blood donor with the gender ($p=0.001$) and media ($p=0.035$). Also, there was a significant association with

factors such as altruism ($p= 0.013$), spiritual benefits ($p= 0.018$), peer pressure ($p= 0.009$), refreshments ($p= 0.006$), appreciation ($p= 0.004$) and knowing the blood group ($p= 0.006$). Interestingly, availability-related issues had a significant association ($p= 0.047$). Travelling difficulty ($p= 0.018$) was a significant associated accessibility-related issue.

Conclusions: The majority of the participants had average overall knowledge of blood donation but had an overall positive attitude. Appreciations, availability-related issues, media and gender are significantly associated factors in blood donors and non-blood donors.

Keywords: Blood donation, Blood transfusion, Knowledge, Attitudes, Associated factors, undergraduates

FP 9

Abstract No. ARS-FHCS-2023-001

Impact of economic crisis in Sri Lanka on food consumption behaviors among medical students in the Faculty of Health Care Sciences, Eastern University, Sri Lanka

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ABSTRACT

Background: The current economic crisis in Sri Lanka has significantly affected the country's economy in general and in food consumption behaviours of citizens. This study provides details regarding food consumption behaviours among a single group of Sri Lankan university students.

Objectives: The objective of the research is to assess the impact of the economic crisis on food consumption behaviours concerning food consumption patterns, food availability and preferences

Methodology: A cross-sectional study was conducted among medical students (n=414) in the Faculty of Health Care Sciences, Eastern University, Sri Lanka using a self-administered questionnaire.

Results: According to the data, 90% of the respondents are dependent on their family for financial support and it is significantly affected by the economic crisis. The study shows that 77% of the students buy essential foods rather than usual snacks and 80.9% found it difficult to find the essential food items. Nearly half of the participants (51.8%) have reduced the amount of food consumed in a day and 80.4% have found it difficult to eat a balanced diet during the crisis. The majority (71.7%) of respondents were not satisfied with their nutritional status during this period of economic crisis. When selecting food, the price has the

highest priority over quality according to the majority. The price was one of the crucial factors to determine the respondents' food purchasing behaviour.

Conclusion: Economic crisis has negatively affected the student's financial status and their food expenditure. It has resulted in changes in their food consumption behaviours that are affected by the affordability, availability and accessibility of the food products.

Keywords: Consumption, economic crisis, food, impact, medical students, nutritional status

FP 10

Abstract No. ARS-FHCS-2023-010

Influencing factors in choosing a life partner among medical students of the Faculty of Health-Care Sciences, Eastern University, Sri Lanka

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ABSTRACT

Background: A life partner is a term commonly used to describe an intimate relationship between two people. In a heterosexual marriage, the bond between the spouses is lifelong. Different people have different perceptions about choosing their life partner. The tendency to choose a life partner varies from person to person in respect of sex, economic status, family background, culture, academic quality, and so on.

Objectives: This study was aimed at estimating the prevalence of opinion about choosing a future life partner and evaluating the influencing factors in choosing a future life partner among medical students at the Faculty of Health-Care Sciences (FHCS), Eastern University, Sri Lanka (EUSL).

Methods: An institutional-based cross-sectional descriptive study was conducted among all medical students of FHCS, EUSL during the study period of February to December 2022 with complete enumeration. A validated online self-administered questionnaire was used as a data collection instrument. Statistical software (SPSS 25.0) was used to analyze the data. Ethical approval was obtained from the Ethical Review Committee at FHCS, EUSL.

Results: A total of 534 medical students from six academic batches participated, and the majority of them (56.6%) were female. More than half (52.5%) of study participants had a wish to choose their life partner among medical students at FHCS, EUSL. Almost the same number of participants preferred to select their life

partner from senior (36.1%) and their own batch (36.5%), while around one quarter (23.4%) preferred their junior students. Family influence (68.9%), friend influence (64.8%), academic performance (86.1%), middle class socioeconomic status (64.8%), preferable age as an elder (48.8%), and social media influence (56.6%) were some contributing factors for the selection of a life partner.

Conclusion: The prevalence of opinion about choosing a future life partner among the medical students of the FHCS, EUSL, was 52.5%. Academic performance, family and friend influence, and socioeconomic status were considered remarkable influencing factors for the selection of life partners.

Key words: Life partner, Influencing factors, Medical students, Faculty of Health-Care Sciences

FP 11

Abstract No. ARS-FHCS-2023-014

Negative impact of COVID-19 pandemic in clinical clerkship of medical students in Eastern University, Sri Lanka

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ABSTRACT

Background: COVID-19 pandemic has significantly affected the education system worldwide. Medical education may be in a state of compromise as it involves practical sessions which directly link medical students with the patients during clinical clerkships. Therefore, the factors affecting clinical clerkships of medical students due to the pandemic must be investigated and addressed properly to ensure the continuity of standard medical education.

Objective: This study aimed to investigate the factors that impair the quality of clinical clerkships of medical students at Eastern University, Sri Lanka during the COVID-19 pandemic.

Method: A descriptive cross-sectional study was conducted among the 3rd, 4th and final-year medical students of Eastern University, Sri Lanka. After obtaining consent from the students, data were collected through a validated online questionnaire and analyzed using Statistical Package of Social Sciences (SPSS) version 26. The ethical approval was obtained from the Ethics Review Committee, Faculty of Health-Care Sciences, Eastern University, Sri Lanka.

Results: A total of 175 medical students among 214 completed the online survey (81.78%). Among them, 44.57% of students had their clinical clerkships shifted to peripheral hospitals; 52.56% of these students didn't have enough transport facilities to reach the hospital on time. Sixty-four per cent of the students stated that the clinical clerkships should not be stopped or postponed but 97.71% of students experienced postponement. A majority (82.85%) of students felt that they haven't had enough variety of patients during their clinical clerkships and

74.86% of students stated that COVID-19 has adversely affected the student-patient relationship. The majority of students (75.25%) who underwent clinical clerkships at the Teaching Hospital and 87.17% of students who underwent clinical clerkship at peripheral hospitals experienced congestion in the wards. Although 70.29% of students had contact with COVID-19 patients without their knowledge only 18.69% of students have been quarantined. The majority of the students agreed that routine theatre sessions have been reduced, that they were not able to attend or observe an adequate amount of emergency cases and have experienced congestion inside the clinic rooms.

Conclusion: Results of this study indicated that the clinical clerkships and clinical exposure of medical students have been negatively affected by the COVID-19 pandemic. These issues need to be addressed to overcome the challenges to ensure the quality of future healthcare services.

Keywords: Medical students, Clinical clerkship, COVID-19, Eastern University, Sri Lanka

FP 12

Abstract No. ARS-FHCS-2023-005

Knowledge and attitude towards leprosy among healthcare workers at Teaching Hospital Batticaloa

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ABSTRACT

Background: Leprosy is a chronic progressive bacterial infection caused by *Mycobacterium leprae*. It remains a serious public health problem due to its ability to cause disability. Sri Lanka currently reports nearly 2000 leprosy cases per year during the last decades. According to the Annual Health Bulletin out of the total cases, nearly 16% is from Eastern Province. It means Eastern Province is in the 2nd highest rank where total cases have been registered for leprosy.

Objectives: The purpose of this study was to assess the knowledge and describe the attitude towards leprosy among healthcare workers in Teaching Hospital Batticaloa.

Methods: A descriptive cross-sectional study was carried out among 348 healthcare workers, in Teaching Hospital Batticaloa. A structured self-administered questionnaire was used to collect data. Statistical Package of Social Science- 25 was used to enter and analyze the data.

Results: Half of the participants had adequate, 33% had moderate, and a minority (15.8%) had inadequate knowledge. A majority (64.1%) had a positive attitude toward leprosy. However, only 60.9% knew that leprosy is transmitted through inhalation. More than one-fifth of healthcare workers (36.5%) mistakenly believed that leprosy is mainly transmitted through skin contact. Sixty per cent identified small pale lesions anywhere on the body with sensory loss and 62.1% identified skin nodules as signs of leprosy. Almost 37% of healthcare workers reported fear of leprosy.

Conclusion: Although the majority had adequate or moderate knowledge and a positive attitude towards leprosy, we identified misconceptions and knowledge gaps centred on its mode of transmission and clinical features. These factors could lead to delays in diagnosis and treatment. An emphasis needs to be placed on education on transmission, low rate of infectivity and clinical features of leprosy as the study revealed certain misconceptions and prejudices still exist even among healthcare workers.

Keywords: Knowledge, Attitude, Healthcare Workers, Leprosy.

**Presented Review Papers by
Invited Speakers**

IS 1

Abstract No. ARS-FHCS-2023-026

Enhancing healthcare efficiency and accuracy through artificial intelligence: a review

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ABSTRACT

The rapid advancements in artificial intelligence (AI) have brought about transformative changes in various fields, including healthcare. In this paper, we present a comprehensive review of the applications of AI in the healthcare industry, focusing on its potential to improve efficiency and accuracy.

AI techniques, such as machine learning, deep learning, and natural language processing, have shown promise in a wide range of healthcare tasks, including diagnosis, treatment planning, patient monitoring, and drug discovery. By leveraging large volumes of data and sophisticated algorithms, AI systems can analyze complex medical information, identify patterns, and provide valuable insights to support clinical decision-making.

The integration of AI technologies in healthcare holds immense potential for enhancing efficiency and accuracy. AI-powered systems can assist healthcare professionals in diagnosing diseases at an early stage, personalizing treatment plans, predicting patient outcomes, and optimizing resource allocation. Additionally, AI can enable remote patient monitoring, telehealth services, and the automation of administrative tasks, thereby reducing healthcare costs and improving overall patient care.

However, the implementation of AI in healthcare also poses challenges related to data privacy, ethical considerations, and the need for regulatory frameworks. The adoption of AI in healthcare requires a collaborative effort between healthcare professionals, technologists, policymakers, and regulatory bodies to ensure responsible and safe use of AI technologies.

In conclusion, AI has the potential to revolutionize the healthcare industry by improving efficiency and accuracy in diagnosis, treatment, and patient care. However, careful attention must be paid to address ethical and regulatory concerns to maximize the benefits and minimize potential risks associated with AI implementation in healthcare.

IS 2

Abstract No. ARS-FHCS-2023-018

Local stability of generalized difference equations and their applications

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ABSTRACT

In this paper, derive the local stability of the generalized difference equations

$$u(k + 1) = pu(k) + qu(k - 1)e^{-u(k-1)} e^{-u(k)}, \quad k \in [0, \infty)$$

and

$$v(k + 1) = \lambda v(k) + \mu v(k - 1)e^{-v(k)}, \quad k \in [0, \infty)$$

which are interesting in their own right, but which may also be viewed as describing the population of a mosquito problem and age structure problem in the field of Mathematical Biology.

Mathematics Subject Classification: 39A10

Keywords: stability, Oscillation, Periodicity.

IS 4

Abstract No. ARS-FHCS-2023-021

Single server health-care based queuing model with backup server

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ABSTRACT

In this article, I studied a queuing model with working vacation, Feedback with Backup server. Arrival follows Poisson process with rate λ . Service time during service period, Service time during working vacation period and vacation time are all exponentially distribution with rate ν , γ and δ respectively. During a working vacation, queue length increases the server change the service rate from working vacation to normal working period. Succeeding of vacation if there is no customer in the system server goes for another vacation is known as working vacation. After getting a service, incomplete or unsatisfied customer decide to leave the system with parameter β' or to continue the system with β ($=1- \beta'$). When the server may experience an unexpected failure at rate γ and after it send for repair before returning to service at rate. The backup server is activated during a failure and serves the client with a service rate μ_{BS} that follows an exponential distribution. This type of model has been examined using Matrix Geometric Technique (MGT) to obtain steady-state probability vectors. Some performance measures are also determined.

Methods & Materials: Queueing frameworks with SWV and perfect assistance have obtained significance over several dozens due to the enormous degree utilized chiefly in produring framework, administration framework, media communications, and PC framework. The best technique for finding the trickier queueing issues is a MGT. Markov chains with queueing hypothesis applications that have a lattice mathematical invariant likelihood vector were examined by

Neuts in 1978. Utilizing the Lattice Mathematical Strategy, Seenivasan et al.(2021) researched a retrial queueing model with two heterogeneous servers. With this piece of writing, we examined SWV breakdown with a backup server. MGT has inspected this queueing model. The appearance follows the FCFS plan. In the second division, a short model depiction is given. In the third division, a few numerical outlines are determined. In the fourth division, performance measurements are introduced in the last division's short decision about the model help satisfaction, a server goes on vacation on the off chance that no client were there.

Results: Results show that if arrival λ rate increases, average number of client at the point server is inactive decreases whereas average number of client at the point server is on SWV, average number of client at the point server is normal service, average number of client at the point server is failure, backup server get activated, average number of client in the system and total output gained increases.

Discussion & Conclusion: Finally, row vector acquired by MGT and furthermore, we determined graphic representation with the impact of λ like the average number of clients assuming the server is inactive, the average number of clients in the event that server is on the SWV, the average number of clients assuming that server is on normal service, the average number of client assuming that server is on failure, backup server enacted, the average number of clients in the system, total output gained & delay time respectively.

IS 5

Abstract No. ARS-FHCS-2023-022

A model based on healthcare for the generalised dispersion of synovial fluids on nutritional transport with influences of magnetic fields

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ABSTRACT

This study presents a comprehensive model for investigating the generalised dispersion of synovial fluids and its impact on nutritional transport in joints, considering the effects of electric and magnetic fields. The aim is to understand the complex interactions between electromagnetic fields, synovial fluid dynamics, and nutrient transport within the cartilage. The research methodology involves the utilization of a perturbation approach and the development of a generalized dispersion model to solve the governing equations governing momentum and mass transfer in the synovial fluid. By incorporating the joint impacts of electric and magnetic fields, the model provides a more accurate representation of the physiological conditions within the joint. Furthermore, the study highlights the spatial variability of nutrient distribution within the cartilage. During imbibition and exudation processes, cells located at the center of the cartilage surface receive higher nutrient concentrations compared to cells at the periphery. Notably, the earliest signs of cartilage degradation are observed in the uninflected regions, underscoring the importance of cartilage nutrition for joint health.

Methods & Materials: The model also explores the influence of flow parameters on nutrient concentration in the articular cartilage. It predicts that an increase in the flow parameter leads to a reduction in nutrient concentration, potentially resulting in adverse effects on cartilage cells and joint function.

To provide a comprehensive analysis, the dispersion coefficient and mean concentration are computed and visualized for various factors, such as the Hartmann number, porous parameter, and viscoelastic parameters associated with gel formation. Graphical representations facilitate a better understanding of the relationships between these factors and cartilage nutrition.

Results: Results show that the dispersion coefficient, a critical parameter characterizing solute dispersion, exhibits an increasing trend with dimensionless time. This coefficient plays a vital role in quantifying the level of nutrient transport to the synovial joint. The findings also demonstrate that low-molecular-weight solutes have distinct concentration distributions compared to high-molecular-weight solutes within the articular cartilage. While diffusion predominantly governs the nutritional transport of low-molecular-weight solutes, a mechanical pumping action dominates the transport of high-molecular-weight solutes.

Discussion & Conclusion: In conclusion, this model contributes to a better understanding of the effects of electromagnetic fields on cartilage cells and the transport of nutrients through synovial fluids. The findings underscore the importance of adequate nutrition for maintaining joint mobility and highlight potential detrimental effects associated with changes in electromagnetic fields and viscoelastic properties. The insights gained from this study can guide future research and aid in developing strategies to promote joint health care.

IS 6

Abstract No. ARS-FHCS-2023-020

Statistical analysis of markovian queuing model with catastrophe, backup server and feedback

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ABSTRACT

In this article, we considered a finite size Markovian queue with single server. When the server breaks down, in order to facilitate the customer, backup server is provided. When system happened to undergo catastrophe, the customers are being removed and by restoration time the system get back to its normal state. Here, we have analysed the number of times the system reached its capacity. After getting a service, incomplete or unsatisfied customer decide to leave the system with parameter β' or to continue the system with $\beta (=1- \beta')$. When the server may experience an unexpected failure at rate γ and after it send for repair before returning to service at rate θ . The backup server is activated during a failure and serves the client with a service rate μ_{BS} that follows an exponential distribution. This type of model has been examined using Matrix Geometric Approach (MGA) to obtain steady-state probability vectors. Some performance measures are also determined.

Methods & Materials: The model explores that, we considered a Markovian queue with finite size. The customers arrived at the mean rate of λ and are being served by a single server. The server rendered the service at a mean rate of μ . When the system experiences catastrophe at the rate of ξ , all the customers are deleted from the system. The restoration time is taken by the system to restore its customers back. The restoration time is distributed by the parameter γ . The server is subject to breakdown and so the backup server is provided for uninterrupted service. After the repair, the server will be back to the service. The

breakdown occurs at the rate of α_0 when the system is in the process of reaching its capacity first time and at α_1 when the system is in the process of reaching its capacity second time. Their corresponding repair times are β_0 and β_1 . The backup server will service at reducible rate of μ_1 .

Results: Results show that, As the arrival rate increases the system is empty $P(E)$ and mean number of customers when server undergoes breakdown $P(BD)$ decreases gradually respectively, the system reaches its capacity one-time $P(OTR)$, the system reaches its capacity second time $P(TTR)$, mean number customers when the backup server services $P(BUS)$ and total number of customers in the system $P(N)$ increases steadily. The service rate is varied. The rise in the value of service rate shows the gradual increase in $P(E)$ while there is a sudden increase $P(BUS)$. As the rate of service goes high, a gradual slow reduction in $P(OTR)$ and $P(TTR)$, while there is a sudden fall in $P(N)$. There is no change in, $P(BD)$, when the rate of service is getting increased.

Discussion & Conclusion: In conclusion, A finite size Statistical Analysis of a Markovian queue is taken into consideration with a single server. The concepts catastrophe, restoration, breakdown, repair and backup server are included and solved by using Matrix Geometric Approach (MGA). The numerical study is done by varying the rate of arrival and service.

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