RCFMJ

Research Conference of Faculty of Medicine, Jaffna – 2024

15th to 16th August, 2024

"Striving for excellence with professionalism at the heart of healing"

Organised by
Faculty of Medicine
University of Jaffna

Proceedings and Abstracts of Free Communications

Under the sphere of
JUICE - 2024
Jaffna University International Research Conference

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Editorial Process

Abstracts were reviewed by the *'Research Conference of Faculty of Medicine – Jaffna'* review committee with a peer review process.

Prof. K. Muhunthan
Chair-Editorial Committee

ISBN 978-624-6150-33-4

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juice.jfn.ac.lk/rcfmj/

Message from the Vice Chancellor

The University of Jaffna has established itself as a leading centre of excellence in research and knowledge dissemination. We actively share our research findings through various platforms, including seminars, workshops, symposia, and conferences at both local and international levels. In 2024, we proudly celebrate our 50th anniversary, a milestone that highlights our enduring commitment to academic excellence in Sri Lanka. Our golden jubilee celebrations feature a series of research conferences organized by various faculties, with the Jaffna University International Research Conference (JUICe) serving as a key event where scholars present their groundbreaking research. These conferences are among the highlights of our anniversary celebrations, underscoring our dedication to knowledge creation and dissemination.

The Research Conference of the Faculty of Medicine (RCFMJ-2024), scheduled for August 15 and 16, 2024, is a pivotal event in our academic calendar. This conference embodies our commitment to advancing medical research and fostering professional excellence. The theme for this year's conference, "Striving for Excellence with Professionalism at the Heart of Healing," is both timely and essential. It emphasizes the importance of maintaining high standards in medical practice while addressing global and national challenges. With the participation of international experts, this conference will enhance our faculty's contributions to medical science, improve healthcare services, and expand our academic knowledge.

The challenges we face today, from climate change to pandemics and shifting demographic patterns, require innovative solutions. RCFMJ-2024 exemplifies our faculty's commitment to adopting new technologies like Artificial Intelligence, digitalization, and minimally invasive techniques. The Organizing Committee has curated a series of insightful talks that enrich the knowledge base of all participants. I commend the dedication of our staff and partners in organizing this significant event under challenging circumstances. Their efforts are a testament to our unwavering commitment to advancing medical research and education.

I extend my best wishes for a successful conference.

All glory to God.

Prof. S. Srisatkunarajah
B.Sc. [Hons] (Jaffna), Ph.D(UK), PGD. Vice Chancellor,
University of Jaffna.

Message from the Dean

A university is a knowledge center. It is also a research centre and a centre of culture. The University of Jaffna has sustained a culture of quality research from its inception. Many scholars produced by the University serve as reputed researchers in various institutions across the world.

As a center of excellence in research, the University of Jaffna disseminates knowledge through seminars, workshops, symposia, and conferences, both local and international. We are all proud that SCIMAGO ranked University of Jaffna as a leading higher education institution in Sri Lanka in Research and Innovation.

To further strengthen this culture of research and knowledge dissemination, the faculties of the University of Jaffna have organized a sequence of research conferences under the sphere of the Jaffna University International Research Conference 2022 (JUICE 2022). I congratulate the Faculty of Medicine for organizing the Research Conference of the Faculty of Medicine, Jaffna – 2022 (RCFMJ – 2022) under the theme, “Shaping medical Sciences in the New Normal.”

I am delighted to see the passion among medical and health care professionals to find alternatives to counter the challenges posed by the New Normal. The Organizing Committee has arranged a number of invited talks to quench the thirst for knowledge among conference participants. I congratulate the Dean and Staff of the Faculty of Medicine for their continuous and tireless efforts in organizing RCMFJ-2022, in spite of the prevailing difficult conditions.

All glories to God.

Prof. R. Surenthirakumaran
MBBS, M.Sc., PGD (Applied Statistics) MD
Dean and Professor in Community Medicine, Faculty of Medicine, University of Jaffna.

Message from the Chief Guest

I am excited and honored to be invited to participate in the Research Conference of the Faculty of Medicine 2024 at University of Jaffna Sri Lanka, commemorating its 50th anniversary. The theme of this year's conference "Striving for excellence with professionalism at the heart of healing" no doubt reflects the ethos of the Faculty of Medicine at University of Jaffna, and is also in line with our aspirations at Duke-NUS Medical School. Both institutions share the quest of providing high level medical education and performing impactful medical research to improve care of our patients. Accordingly, I very much look forward to the exchange of discoveries and learnings that will take place at the upcoming Conference. In addition, I am also very happy to finally be able to visit Jaffna in the context of our growing collaboration with the Faculty of Medicine facilitated by the SingHealth Duke-NUS Global Health Institute (SDGHI). We envision that this partnership will serve to anchor SDGHI activities in Sri Lanka, as one of the major hubs for our global program, serving as a foundation for our work together to improve health and quality of life in our region and around the world.

Professor Thomas Coffman
Dean, Duke-NUS Medical School,
James R Clapp Professor of Medicine, Duke University Medical Center.

Message from the Guest of Honour

It gives me great pleasure to send this message of felicitation to the Research Conference of the Faculty of Medicine, Jaffna (RCFMJ) 2024. Research remains one of the key responsibilities of any academic endeavour and I am pleased that the University and the Faculty have embarked on regular international conferences to showcase research to the wider audience. This year is significant as it coincides with the celebrations of the 50th Anniversary of the University of Jaffna.

The significant strides made in the research endeavours of the faculty in recent years are reflected in its current strategic plan. These endeavours have resulted in several positive outcomes which include high quality publications in peer reviewed journals, the increase in staff assuming full professorships, delivering international research collaborations, and the establishment of specialist centres, prominent amongst which is the Centre of Digital Epidemiology and the imminent launch of a Clinical Trial Unit at the Jaffna Teaching Hospital. I have no doubt the future of research in the faculty will make even greater strides to deliver on the objectives of the strategic plan.

The conference topics have been carefully selected not only to address new and advancing technologies but also to discuss solutions to enhance healthcare and the social impact in low and middle-income countries. Innovative technologies can be transformative and will no doubt have considerable impact on the future delivery of healthcare. However, they need to be managed with care so that the risks are also identified and minimised through appropriate risk mitigation strategies. The implication of deploying these technologies in resource poor settings also need careful analysis. I have no doubt the conference will address these critical areas of research.

My best wishes for an interactive and productive conference

Professor Nadarajah Sreeharan
MBBS, PhD, FRCPC
Visiting Professor, Kings College, London,
Formerly Foundation Chair Professor of Medicine - University of Jaffna,
Formerly Senior Vice President & European Medical Director, Global R&D, GlaxoSmithKline".

PROGRAMME - 15.08.2024

"Striving for Excellence with Professionalism at the Heart of Healing"

9.00 am – 12.00 noon **Preconference workshop**

Evidence: Based Cancer Control Strategies for the Northern Province, Sri Lanka
Venue: Conference hall, Faculty of Medicine, University of Jaffna

2.00 pm – 4.00 pm **Free paper sessions**

Session 1
Venue: Boardroom, Faculty of Medicine, University of Jaffna

Session 2
Venue: Seminar room, Department of Community and Family Medicine.

6.00 pm – 9.00 pm **Opening of the Clinical Trial Unit and Dinner**

Venue: Clinical Training and Research Block of the Faculty of Medicine, University of Jaffna

PROGRAMME - 16.08.2024

Venue - Hoover Auditorium, Faculty of Medicine, University of Jaffna

"Striving for Excellence with Professionalism at the Heart of Healing"

8.30 am **Inauguration**

Address by Vice Chancellor - Prof S Srisatkunarajah

Address by the Dean - Prof R Surenthirakumaran

Address by Guest of Honor - Prof N Sreeharan

Keynote address by Chief Guest - Prof Thomas Coffman
Using Omics Technologies to Address the Problem of Diabetic Nephropathy

10.00 am **Tea break**

10.30 am **Symposium 1**

Translational Medicine – Bridging the gap between basic science discoveries in improving patient outcomes

Prof Anuja Premawardhena
New tricks for an old disease: Advances in the treatment of thalassaemia

Prof Shaman Rajindrajith
Gut Motility and Patient Wellness: Optimizing Care Strategies

11.45 am **Plenary 1**

Prof Tan Hiang Khoon
Modernizing Hospitals for Enhanced Patient Care

12.30 pm **Lunch**

PROGRAMME - 16.08.2024

Venue - Hoover Auditorium, Faculty of Medicine, University of Jaffna

"Striving for Excellence with Professionalism at the Heart of Healing"

1.30 pm Symposium 2

Transforming Healthcare: Technology and Early Detection for Better Outcomes

Prof Jai Prashanth Rao
Revolutionizing Healthcare: Robotics in Patient-Centric Care

Prof Krish Nirantharakumar
Data and technology driven learning health systems for low and middle income countries

Dr N Vikneswaran
Endoscopic treatment of gastrointestinal neoplasia: an overview

2.45 pm Symposium 3

Medical Research and innovations in patient-centered care

Dr Saumya Shekhar Jamuar
Unlocking the Future through Genome Sequencing and Diagnosis

Prof Jonas Karlström
Empowering Health in Developing Nations: Redefining Care in Low- and Middle-Income Countries

Prof Srisala Navaratnam
"Exploring Diverse Models and Innovations for Cancer Control"

3.45 pm Plenary 2

Prof N Sreeharan
Embracing Emotional Intelligence: A Key to Achieving Harmony in Work-Life Integration

4.15 pm Closing ceremony

Keynote Address

Using Omics Technologies to Address the Problem of Diabetic Nephropathy

Professor Thomas Coffman

Dean, Duke-NUS Medical School,
James R Clapp Professor of Medicine, Duke University Medical Center.

Diabetic nephropathy (DN) is a leading cause of end-stage kidney failure in developed countries around the world, and is a source of significant suffering, morbidity and mortality. In Singapore, the incidence of diabetes as a cause of kidney failure is among the highest in the world. However, despite its prominent global prevalence and years of study, the molecular pathogenesis of DN is not clearly defined. We established the Diabetes study in Nephropathy And other Microvascular cOmplications (DYNAMO) consortium with a major objective of identifying the root causes of DN to provide a basis for new approaches to prevention, risk stratification, and treatment. To achieve this objective, we assembled a team of world-class multidisciplinary researchers who are focused on unravelling causal mechanisms of DN. The key nucleus of the team is based in Singapore but comprises collaborating investigators from six countries and >20 institutions. A major focus has been deep phenotyping of carefully curated Singaporean cohorts enriched for diabetic kidney and eye disease. This work has leveraged on “omics” technologies as powerful, scientifically agnostic approaches for solving the complex pathophysiology of diabetic complications. Organizing these cohorts and carrying out thousands of genomic, metabolomic, and proteomic assays was a major accomplishment during the first phase of DYNAMO, generating a large data set that will be an enduring resource for understanding DN in the Singaporean population and beyond. We have also taken great advantage of the proximity of basic and clinician scientists in DYNAMO, identifying a metabolomic profile shared in humans and mice with DN that is linked to albuminuria and kidney injury, and can be therapeutically modulated. The details of this work and its translational implications will be discussed.

Plenary 1

Modernizing Hospitals for Enhanced Patient Care

Prof Tan Hiang Khoon

MBBS, FRCS (Ed), FAMS, PhD
Deputy Chief Executive Officer (Future Health System), Singapore General Hospital; Group Director, International Collaboration Office, SingHealth, Director, SingHealth Duke-NUS Global Health Institute.

The evolving healthcare landscape demands that healthcare systems globally address rising costs, population shifts, healthcare worker burnout, and increasing patient expectations. Hospitals remain pivotal in patient care and must adapt to these changes. This talk explores integrated care models, digitalization, workforce investment, and expanding the hospital's role beyond its walls to help hospitals keep pace with this dynamic environment.

Plenary 2

Embracing Emotional Intelligence: A Key to Achieving Harmony in Work-Life Integration

Professor Nadarajah Sreeharan

MBBS, PhD, FRCPC
Visiting Professor, Kings College, London,
Formerly Foundation Chair Professor of Medicine - University of Jaffna,
Formerly Senior Vice President & European Medical Director, Global R&D, "GlaxoSmithKline".

Emotional intelligence (EI) can be defined simplistically as an enhanced ability to manage one's own emotions as well as the ability to recognise and manage the emotions of those around, thereby establishing mastery over life experiences.

The concept of EI was coined in 1990 by Mayer & Salovey to differentiate from Cognitive Intelligence (CI), which was at that time believed to be the dominant attribute of human intelligence. They proposed a 4-branch model to better define EI. The drive to focus on EI arose from the realisation that focussing solely on CI often led only to temporary fulfilment and a lack of harmony and balance in life experiences. This belief was further strengthened by the observation that leadership qualities of many academic and industry leaders were uniquely characterised by a high sense of EI, thus reducing workplace conflicts, enhancing productivity and a balanced life with a sense of satisfaction and happiness.

The concept of work-life balance arose from pre 20th century human endeavours, where work was hard and tedious, usually of a physical nature and the expectation that rewards from this stressful and demanding work were solely to contribute to a satisfactory personal and family life. It wrongly separated "work" from "life" when the focus should be on the optimisation of the fulness of all life experiences, embracing both work, leisure, and personal space. Anomalies of this work-life concept, characterisation of the manifestations of EI and strategies to strengthen EI and enhance personal and professional development will be discussed.

Symposium 01

Translational Medicine –Bridging the gap between basic science discoveries in improving patient outcomes

Prof Anuja Premawardhena
MBBS, MD, MRCP, FRCP, DPhil (Oxon), FCCP, FNAS
Cadre Chair and Senior Professor,
Department of Medicine,
Faculty of Medicine,
University of Kelaniya.

New tricks for an old disease: Advances in the treatment of thalassaemia

Hemoglobin disorders are among the most prevalent monogenic diseases affecting humanity globally. Annually, over 70,000 children are born with severe thalassemia or sickle cell disease, primarily in developing regions. The standard treatment for severe beta-thalassemia, which involves blood transfusions and chelation therapy, can help patients live well into their 50s when optimized. However, the utility of blood transfusions is limited for sickle cell disease, and the mainstay of treatment is to prevent disease crises through the optimal use of hydroxyurea.

Although progress in the field of hemoglobinopathies has been relatively slow compared to other medical disciplines, advancements in molecular biology and its clinical applications have led to notable achievements. Gene therapy, long considered a futuristic prospect, has finally become a reality, with the FDA approving two products for the treatment of sickle cell disease and thalassemia in 2023. This landmark development, though currently accessible to only a select few, signifies that the oft-cited "bench-to-bedside" concept is more than just a catchphrase.

Symposium 01

Translational Medicine –Bridging the gap between basic science discoveries in improving patient outcomes

Prof Shaman Rajindrajith

MBBS, MD, FRCPCH, PhD
Chair Professor of Paediatrics,
Department of Paediatrics,
Faculty of Medicine,
University of Colombo.

Gut Motility and Patient Wellness: Optimizing Care Strategies

Gut motility, orchestrated by the enteric nervous system (ENS), is pivotal for maintaining gastrointestinal health and overall patient wellness. The ENS, often referred to as the "second brain," regulates the complex motility patterns necessary for digestion and nutrient absorption. These patterns include peristalsis, segmentation, and migrating motor complexes, each playing a crucial role in the coordinated movement of contents through the gastrointestinal tract.

In children, there are two types of motility disorders. They include primary motility disorders and functional gastrointestinal disorders (FGIDs). In this lecture we will be focusing on the area of functional disorders. Functional disorders such as irritable bowel syndrome (IBS), functional dyspepsia, and functional constipation are highly prevalent across the world. These disorders, characterized by chronic symptoms without an identifiable organic cause, significantly impact the quality of life. The pathophysiology of FGIDs is multifactorial, involving gut-brain axis dysregulation, visceral hypersensitivity, altered gut motility, and psychosocial factors.

Management of FGIDs in children necessitates a multifaceted approach. Dietary interventions, such as a low FODMAP diet, and the use of probiotics and prebiotics, have shown promise in alleviating symptoms. Psychological therapies, including cognitive-behavioral therapy (CBT) and gut-directed hypnotherapy, are effective in managing pain and improving coping strategies. Pharmacological treatments, like antispasmodics, low-dose antidepressants, and prokinetics, provide symptom relief in many cases. Additionally, complementary therapies, including acupuncture and herbal remedies, are increasingly being integrated into treatment plans. Future interventions are likely to focus on personalized medicine, leveraging advancements in microbiome research to tailor treatments based on individual microbiome profiles. Fecal microbiota transplantation (FMT) is emerging as a potential therapy for refractory cases by restoring healthy gut flora. Technological innovations, such as biofeedback and mobile health applications, are expected to enhance patient engagement and selfmanagement.

In conclusion, optimizing care strategies for children with FGIDs involves a holistic approach that integrates dietary, psychological, and pharmacological interventions. Continued research into the gut-brain axis and microbiome will pave the way for novel interventions, ultimately improving patient wellness and quality of life.

Symposium 02

Transforming Healthcare: Technology and Early Detection for Better Outcomes

Prof Jai Prashanth Rao

MBBS, FRCSEd (Neurosurgery), MRCSEd,
MMED, MHPEd
Head, Department of Neurosurgery,
Senior Consultant Neurosurgeon,
National Neuroscience Institute - Singapore.

Revolutionizing Healthcare: Robotics in Patient-Centric Care

In patient care, robots assist with various tasks, from medication dispensing to rehabilitation. Robots can provide consistent, precise care, monitor patient vitals, and assist in daily activities, improving the overall quality of healthcare. As technology advances, the principles guiding robotic applications focus on improving surgical precision, expanding feasible procedures, enhancing patient outcomes, and providing unparalleled educational and patient care opportunities. This convergence of technology, surgery, and patient care represents a significant shift towards more refined, effective, and comprehensive healthcare practices.

Robotic systems in neurosurgery and patient care embody principles of precision, minimally invasive techniques, and enhanced capabilities for both surgeons and healthcare providers. The primary advantage is improved accuracy in procedures, reducing the risk to surrounding tissues and enhancing patient outcomes. Robots equipped with advanced imaging and navigation systems allow surgeons to perform complex tasks with higher precision. From an educational perspective, robotic surgery provides significant benefits. Surgeons-in-training can practice with robotic simulators, which offer a safe, controlled environment for honing skills before operating on patients. These systems provide immediate feedback and allow for the repetition of procedures without risk. Furthermore, robotic platforms often include detailed recording capabilities, enabling educators to review and critique surgical techniques, fostering continuous improvement. The integration of artificial intelligence and machine learning enhances educational tools by offering personalized training modules based on the trainee's performance.

Symposium 02

Transforming Healthcare: Technology and Early Detection for Better Outcomes

Prof Krish Nirantharakumar

MBBS, MPH, MFPH, MRCP, MD
Professor in Health Data Science and Public Health,
Joint Director of the Centre for Health Data Science,
Honorary Consultant in Public Health Medicine,
Deputy Director IAHR,
University of Birmingham.

Data and technology driven learning health systems for low and middle income countries

A Learning Health System describes a health service that learns from every patient that it encounters. This requires continuous learning cycles which can be conceived of in 3 steps: 1) Clinical practice generates data; 2) Data is explored and analysed to produce knowledge; and 3)Knowledge is implemented back into practice. My research has focussed on innovative methodological approach to develop technologies to enable these steps efficiently, in particular to explore and analyse data to produce knowledge (step 2). The technology to enable this second step, named Dexter (Data Extraction for Epidemiological Research) has led to the University of Birmingham gaining an international reputation for being one of the very few universities to have successfully researched and knowledge-engineered epidemiological research study designs into computer executable formats. Using the technology we have been able to democratise health data research and publish over 100 peer reviewed studies in leading journals and attracted over 20 million pounds worth of grants. In my talk I will discuss some of the scientific outputs generated from this technology (Dexter). To implement knowledge into practice (step 3), we are developing open source tools, through a platform called OpenClinical, to produce computable clinical guidelines. Recently in Sri Lanka we have also embarked on researching how data generated during clinical practice could be captured efficiently through electronic health records (step 1).

In my talk I will discuss opportunities for low-middle income countries like Sri Lanka to utilise such technologies (Dexter, Electronic Health Records and OpenClinical) and other emerging technologies (e.g. large language models such as ChatGPT) to implement a world leading learning health system to provide better care. Sri Lanka provides a unique opportunity to introduce a digital learning health system effectively and be a model for dissemination and replication in other LMICs for several key reasons. There is a clear digital health blueprint from the Sri Lanka Ministry of Health with OpenMRS as the primary choice of EHR system. There are supporting policy units such as the WHO Primary Care Policy Unit and funding sources such as that received from Asian Development Bank. Sri Lanka has a history of pioneering electronic health records in primary care and secondary care and is one of the only LMICs with a specialist training programme for clinical informatics, a pathway that is lacking even in the United Kingdom.

Symposium 02

Transforming Healthcare: Technology and Early Detection for Better Outcomes

Dr. N Vikneswaran
MBBS, MRCP, FAMS
Senior Consultant,
Department of Gastroenterology & Hepatology,
Singapore General Hospital.

Endoscopic treatment of gastrointestinal neoplasia: an overview

Endoscopic treatment of early gastrointestinal cancer, encompassing techniques like Endoscopic Mucosal Resection (EMR), Endoscopic Submucosal Dissection (ESD), and Radiofrequency Ablation (RFA), offers minimally invasive alternatives to traditional surgery. In patients with precancerous lesions and superficial cancers with no nodal metastases, they have largely replaced surgery as the preferred treatment modality.

EMR involves resecting superficial cancerous tissues and is ideal for smaller lesions. ESD, allows for en bloc removal of larger or deeper lesions, reducing recurrence risks but at the risk of higher complication rates. RFA utilizes thermal energy to ablate dysplastic tissues, primarily in Barrett's esophagus, preventing progression to esophageal adenocarcinoma. These endoscopic approaches enhance patient outcomes with reduced morbidity, shorter recovery times, and preservation of organ function.

Symposium 03

Medical Research and innovations in patient-centered care

Dr Saumya Shekhar Jamuar

MBBS, MRCPCH
Director-SingHealth Duke-NUS Institute of Precision Medicine,
Chair-Chapter of Genomic Medicine, Academy of Medicine, Singapore,
Senior Consultant-Department of Paediatrics and Genetics Service, KKH, SingHealth.

Unlocking the Future through Genome Sequencing and Diagnosis

Whilst the underlying principles of precision medicine are comparable across the globe, genomic references, health practices, costs and discrimination policies differ in Asian settings compared to the reported initiatives involving European-derived populations. We have addressed these variables by developing an evolving reference base of genomic and phenotypic data and a framework to return medically significant variants to consenting research participants applicable for the Asian context. Through an analysis of ~10,000 healthy Singaporeans, we characterized clinically significant genetic variation in our population.

We observed disparate genetic risk burden attributable to ancestry-specific recurrent variants and identified individuals with variants specific to ancestries discordant to their self-reported ethnicity, mostly due to cryptic admixture. About 27% of severe recessive disorder genes with appreciable carrier frequencies in Asians are missed by carrier screening panels, and we estimate 0.5% Asian couples at-risk of having an affected child. Prevalence of medically actionable variant carriers was 3.4% . We profiled 23 pharmacogenes with high-confidence genedrug associations and found 22.4% of Asians at-risk of Center for Disease Control and Prevention Tier 1 genetic conditions concurrently harbour pharmacogenetic variants with actionable phenotypes, highlighting the benefits of pre-emptive pharmacogenomics. Our findings illuminate the diversity in genetic disease epidemiology and opportunities for precision medicine through genome sequencing and diagnosis for a large, diverse Asian population

Symposium 03

Medical Research and innovations in patient-centered care

Prof Jonas Karlström
lead for Innovation Core with SingHealth,
Duke-NUS Global Health Institute (SDGHI).

Empowering Health in Developing Nations: Redefining Care in Low- and Middle-Income Countries

Trauma is a major burden of disease in South and Southeast Asia regions, with affordability being a major barrier to access quality trauma care. Annually, more than 970 million people worldwide suffer trauma-related injuries, resulting in around four point five million deaths. Trauma is the leading cause of death and disability globally among those under 35 years of age. In LMICs, orthopaedic trauma care is often inadequate and unaffordable, with LMICs accounting for 93% of road traffic-related deaths. This results in significant disability amongst survivors and imposes a great socio-economic burden on LMIC countries.

In Sri Lanka, trauma is the leading cause of hospitalisation, with a rate of 3100 admissions per 100,000 population. Current expenditures are estimated to be in the range of 14.2 billion rupees ($80 million), with 37% of that cost dedicated to inpatient care.

Together with the Medical Faculty of Jaffna University and the Jaffna Teaching Hospital, SingHealth Duke-NUS and its partners at the Harvard Global Orthopaedics Collaborative and the non-profit SONA Global has initiated work on a novel portfolio of Affordable Trauma Care projects which aims to harness frugal innovation to increase access to essential musculoskeletal trauma care to LMICs in South and Southeast Asia.

As a larger dedicated team of health care professionals we will start off by investigating two novel technologies, a low-cost external fixation system clamp and a negative wound pressure pump, both of which may be produced at 100X cost reduction in comparison to existing alternatives.

The partnership will collaborate to test, validate, trial and facilitate regional regulatory approval of the mentioned innovative frugal trauma products. As a team, we hope to democratize access to quality trauma care and meaningfully impact the staggering regional statistics of traffic related death, morbidity and disability.

Symposium 03

Medical Research and innovations in patient-centered care

Prof Srisala Navaratnam

MBBS, PhD, FRCPC
President and Chief Executive Officer,
Cancer Care – Manitoba.

Exploring Diverse Models and Innovations for Cancer Control

Cancer is the leading cause of death in the world with nearly 10 million deaths in 2020. Around the world, governments and healthcare systems are exploring strategies for sustainability of cancer control as the number of people with cancer continues to rise. In 2016, the Cancer Moonshot Taskforce under the US Administration began a mission to "end cancer as we know it". The strategies 'shoot for the moon' with goals of achieving scientific breakthroughs, leveraging data and accelerating new therapies, but it is increasingly focusing on very important groundwork goals of sustainability and equitable care.

CancerCare Manitoba, a provincial cancer agency, is mandated to bring cancer control to the province of Manitoba, Canada. We have developed our Roadmap to Cancer Control for Manitoba 2020, in which ensuring the sustainability of cancer services is one of the six priorities with an objective of implementing innovative models of care. Exploring diverse and innovative models of care is not only key to sustainability but also improves patient outcomes and patient experience. With our strong research mandate through the Paul Albrechtsen Research Institute CancerCare Manitoba, we approach the incorporation of models of care based on research.

We have adopted many innovative models of care. I will focus on three of these at the conference to highlight their success:

1. Bringing high-quality care closer to home through the community oncology program, leveraging primary care providers. This program has expanded to a cancer hub model to include nurse navigators and psychosocial services to provide timely diagnosis and support through the cancer journey. Very recently we have incorporated community connectors to meet the needs of underserved populations.
2. Improving cervical screening through human papillomavirus (HPV) self-sampling.
3. Implementation of urgent care specific to cancer patient.

List of Contents

CP 01

Transfusion practice in critically ill patients at intensive care units of Teaching Hospital Jaffna: A retrospective study

Bavani, S.[1,2] Abayadeera, A.,[2,3] Sooriyakumar, N.[4]
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[2]*Postgraduate Institute of Medicine, University of Colombo, Sri Lanka*
[3]*Department of Anaesthesia, University of Colombo, Sri Lanka*
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Abstract

Introduction: Heterogeneity exists in red cell transfusion practice among intensive care units. Anaemia poses significant challenges in critically ill patients, frequently requiring blood transfusions. Although, transfusions are life-saving, they carry inherent risks. This audit aims to assess transfusion practices, transfusion threshold levels, adherence to indications for transfusion, complications, and outcomes among critically ill adult patients (≥18 years) who were transfused in the intensive care units of Teaching Hospital Jaffna.

Methods: A retrospective study was conducted at intensive care units of Teaching Hospital Jaffna from January to June 2018. Data from patient records and blood bank records were collected and analysed with SPSS 21 software. Parameters included patient demographics, indications for transfusion, transfusion trigger, transfusion volume, comorbidities, complications, and outcomes.

Results: The audit comprised of 70 adult patients (mean age 54.3 ± 18.7 years), with 64.3% having comorbidities. Sepsis (44.3%) and low haemoglobin (31.4%) were the most common indications for transfusion. Pre-transfusion haemoglobin levels ranged mainly from 7 to 7.9 g/dL (38.6%). Most patients received two units of blood (28.6%). Complication rates were low, with only one case of transfusion-associated acute lung injury.

Conclusion: This audit emphasises the need for standardized transfusion protocols united with evidence-based guidelines. Transfusions are essential in critical care; however, practices should be tailored to individual patient needs to mitigate risks and optimize outcomes.

Keywords: Critically ill patients, Clinical outcomes, Transfusion practice, Transfusion triggers.

Introduction

Anaemia is a major problem in severely ill patients. Patients who are in critical care units frequently receive blood transfusions and it is associated with advantages as well as potential harm [1]. Red blood cell transfusion is important in life saving events and is an essential component during resuscitation. However, during the past many years safety concerns have risen. Therefore, blood transfusion and the transfusion trigger are decided on a case by case basis according to the level of haemoglobin, pathological condition and physiological parameters of the patient [2].

Haemoglobin is an important factor for oxygen delivery to tissues and helps to narrow the gap between oxygen demand and supply. Blood transfusion poses significant risks such as acute reactions, late reactions, acute lung injury, transfusion overload and infections [3,4]. Red blood cells should be transfused one unit at a time, and the patient's haemoglobin should be checked before each unit transfused, unless there is ongoing bleeding or a large deficit that needs correction [4]. Appropriate transfusion practices are crucial for patient safety and optimal outcomes.

The aim of this audit was to assess transfusion practices, transfusion threshold levels, indications adhered for transfusion practice, complications, and outcomes among critically ill adult patients (≥18 years) who received blood transfusions at Teaching Hospital Jaffna.

Methods

This is an audit done at the intensive care units (ICU) of Teaching Hospital Jaffna (THJ). In this audit, blood transfusions carried out at the medical, surgical and obstetric ICU from January to June 2018 were analyzed. Ethical clearance was obtained from the Ethics Review Committee of Teaching Hospital Jaffna. Data were collected from patient records and blood bank records. The collected details included age, gender, indication for ICU admission, type of ICU, indication for transfusion, admission haemoglobin, pre-transfusion haemoglobin and post-transfusion haemoglobin, transfusion of blood products, comorbidities, transfusion reactions and outcome. The data were entered into an Excel sheet, analyzed with SPSS statistical software, and compared with best practice recommendations of the British Committee for Standards in Haematology (BCSH) guideline on the management of anaemia and red cell transfusion in adult critically ill patients (2013). This guideline suggests maintaining a transfusion trigger of 7 g/dL or below in critically ill patients. In cases of severe sepsis, in early stages, a liberal approach targeting 9-10 g/dL is recommended, while in later stages, a conservative transfusion approach targeting a hemoglobin level of 7–9 g/dL is recommended.

Results

In total, the records of 70 patients were analyzed. The mean age of the patients was 54.3± 18.7 (range 18 to 86) years; 62.9% were males and 37.1% were females; 64.3% had comorbidities. In terms of outcomes, 40% of patients were discharged from the ICU, while 60% died during the ICU stay and these deaths were not related to transfusion.

Figure 1 shows the indications for blood transfusion and their relative proportions. The results show that sepsis was the most common indication for transfusion (44.3%), followed by low haemoglobin (31.4%), bleeding (17.1%), disseminated intravascular coagulation (DIC, 4.3%) and other causes, including haemophilia and haemoglobinopathies (2.9%).

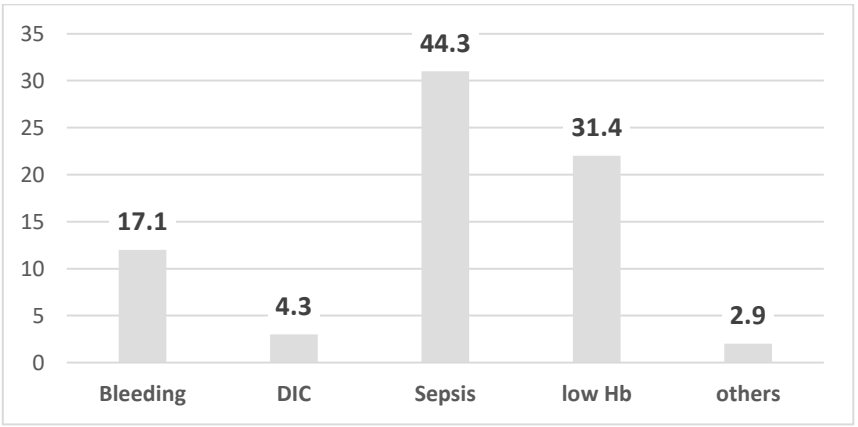

Figure 1. Indications for transfusion (n=70)

Table 1 shows the distribution of pre-transfusion haemoglobin levels. The pre-transfusion haemoglobin level was less than 7g/dL in 20%, 7 to 7.9g/dL in 38.6%, 8 to 8.9 g/dL in 31.4%, 9 to 10 g/dL in 8.6% and more than 10g/dL in 1.4%.

Table 1. Distribution of pre-transfusion haemoglobin levels (n=70)

Pre-transfusion (g/dL)	n	%
>10	1	1.4
9-10	6	8.6
8-8.9	22	31.4
7-7.9	27	38.6
<7	14	20.0
Total	70	100.0

Figure 2 shows the number of blood transfusions given and their relative proportions. This study shows that 25.7 % received one unit of blood, 28.6% of patients received 2 units, 12.9% received 3 units, 11.4% received 4 units and 5.7% received 5 units and 15.7% received more than 5 units of blood.

In the sample, 45 (64.3%) had comorbidities. Among those with comorbidities, 11 had pre-transfusion Hb levels of <7g/dL, 18 had pre-transfusion Hb levels between 7 and 7.9 g/dL, and another 11 patients had pre-treatment Hb levels between 8 and 8.9g/dL and 5 patients had Hb levels >9g/dL.

Among the 70 patients, 34 (48.6%) received both blood and FFP while 10 (14.3%) patients received both platelets and blood transfusion. The remaining 26 (37.1%) patients received only blood transfusions. Only one patient had transfusion related lung injury; others did not have complications

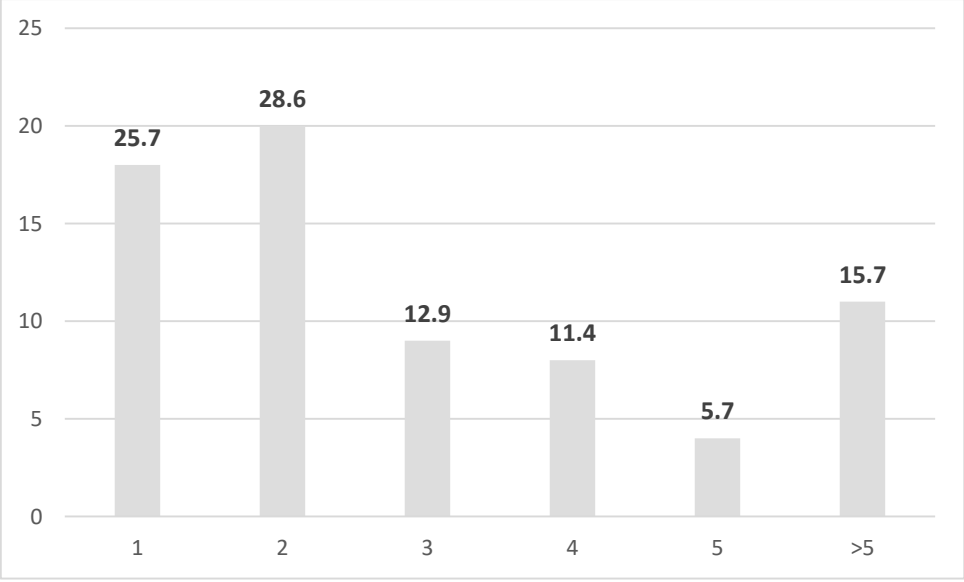

Figure 2. Distribution of blood transfusions by number of units of blood (n=70)

Discussion

The mean age of the patients in the study was 54.3±18.7 years and 64.3% of them had comorbidities. The literature suggests that patients receiving red blood cell (RBC) transfusions tend to have more medical comorbidities regardless of their age [5]. Although blood transfusions are not related to age, patients with comorbidities may require more blood transfusions, especially patients with ischemic heart disease, for whom a higher transfusion trigger of over 8 g/dL is recommended [6].

In this audit, the common indication for blood transfusion was sepsis and most patients had pre-transfusion haemogloblin levels between 7 and 7.9 g/dL. The BCSH 2013 guideline recommends a transfusion trigger of 7 g/dL or below, with a target haemoglobin range of 7–9 g/dL for critically ill patients, unless specific co-morbidities or acute illness-related factors modify clinical decision-making (Grade 1B evidence- individual RCT with narrow confidence interval) [7]. However, transfusion triggers should not exceed 9 g/dL in most critically ill patients (Grade 1B evidence) [7].

The same guideline suggests that restricted blood transfusion is more desirable than liberal transfusion in critically ill patients and that the target haemoglobin level should be 7 to 9 g/dL. However, according to the guideline, the early phase of resuscitation in septic shock needs liberal blood transfusion and the target haemoglobin should be 9 to10 g/dL if central venous oxygen saturation is persistently less than 70% (Grade 2C evidence-Outcome research study) [7]. During the later stages of severe sepsis, a conservative approach to transfusion should be followed with a target haemoglobin level of 7 to 9 g/dL (Grade 1B evidence) [7]. The transfusion threshold level among younger people without significant medical problems is 7 g/dL [7].

Pre-transfusion haemoglobin levels of 90% of the critically ill patients in the audit were less than 9g/dL and consistent with the BCSH guideline. As the majority of the critically ill patients had comorbidities, sepsis and their pre-transfusion haemoglobin level should be greater than 7g/dL but less than 9g/dL, according to this guideline.

In this audit, the highest percentage of patients received two units of blood at a time because most of them had sepsis and required liberal transfusion at the initial stage. However, international guidance indicates that one unit should be transfused at a time, and the haemoglobin level checked after transfusion of each unit [7]. In non-emergency, non-bleeding situations, a single unit may help to reduce blood transfusion and its complications in future [4].

Blood transfusion complications include acute reactions, infections, circulatory overload and transfusion related acute lung injury. The most common complication reported in the literature is acute febrile reactions [8]. Other common complications include transfusion associated lung injury, circulatory overload, and infections [3]. In this audit, only one patient had complications and this was transfusion related acute lung injury.

Fresh frozen plasma (FFP) is necessary for the treatment of coagulation derangements in bleeding patients and also for managing multiple clotting factor deficiencies such as DIC [9]. A moderate degree of thrombocytopenia is common in critical care patients, in particular, patients with sepsis or DIC. In critically ill patients, in the absence of acute bleeding, platelet transfusion may be considered if the platelet count is less than $20 \times 10^9/l$ or for patients undergoing invasive procedures. In this study, 34 patients (48.6%) received FFP, and 10 patients (14.3%) received platelets in addition to blood transfusions. These transfusions were decided by clinicians.

Red blood cell transfusions are associated with a lower relative risk of in-hospital death, particularly in the most severely ill patients, highlighting the need to take the severity of illness into account when making decisions on blood transfusions [10]. In this audit, 60% of patients died during ICU stay and 40% were discharged. The deaths were not related to blood transfusion.

The European society of intensive care clinical practice guideline supports evidence-based decision-making and identifies areas for the development of transfusion practices and avoidance of unnecessary transfusions in critically ill, non-bleeding adults [10].

Conclusion

Critically ill patients require blood transfusion and it is an important and common intervention in ICU. Transfusion depends on physiological and pathological parameters in critically ill patients. Despite the evidence and established guidelines, there are variations in clinical practices with respect to blood transfusion. This audit showed the transfusion trigger in the ICUs of THJ was less than 9 g/dL in the vast majority of patients, consistent with the standards of the 2013 BCSH guideline and recommendations. Periodic audits are recommended to improve transfusion practice.

Acknowledgments

The authors would like to express their sincere gratitude to the Director, Teaching Hospital Jaffna, for his support for data collection.

Conflict of interest

The authors have no competing interests.

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CP 02

Mental health literacy among first-year undergraduates at University of Jaffna

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Abstract

Background & objective: Mental health issues are prevalent in over 50% of university students globally. Mental health literacy has been repeatedly shown to influence the mental health of individuals and beyond. This study aimed to determine the level of mental health literacy among first-year undergraduates at University of Jaffna.

Methods: This institution-based descriptive cross-sectional study was conducted among 541 students from ten faculties and one unit of University of Jaffna. Data were collected using a self-administered questionnaire, which included a locally developed mental health literacy scale. Data were analysed with one-way ANOVA and chi square tests using IBM SPSS Statistics, version 23. The protocol was approved by the Ethics Review Committee, Faculty of Medicine, Jaffna (J/ERC/22/138/NDR/0279).

Results: Females demonstrated greater knowledge than males [$F(1,538) = 13.29, p < .001, {\eta_p}^2 = 0.02$]. Responses of students with Buddhism as their religious identity suggested they were more inclusive of people with mental illness ($p \leq .05$ for all relevant comparisons). Students from the A/L biology stream showed greater knowledge than those from commerce, technology, and mathematics streams, but not arts stream [$F(4,535) = 11.02, p < .001, {\eta_p}^2 = 0.08$]. Students from the biology stream also had less misconceptions about mental illnesses ($p \leq .02$). Students preferred obtaining help from family and friends (92%) than mental health professionals (53%), and they did not seem aware of the diverse mental health resources available within and outside the university.

Conclusion: Resources to improve mental health literacy should be provided by the university for all students as they begin their higher education. This would help to reduce adverse outcomes due to mental health issues.

Keywords: Mental health literacy, Help-seeking, Mental health promotion, Undergraduate mental health, University of Jaffna

Introduction

Mental health surveys and studies have found that over one fifth of the students in universities have at least one diagnosable mental illness [1]. However, the prevalence of help-seeking

among university students does not match the prevalence of mental health issues in this population [2]. This low rate of help-seeking could partly be attributed to lack of understanding of mental health issues and services [3].

Mental health literacy (MHL) is defined as knowledge and beliefs about mental disorders, which aid their recognition, management, or prevention [4]. MHL has been repeatedly shown to influence mental health status [5]. Studies show poor MHL may be associated with depression [6], deliberate self-harm [7], and anxiety [8] in young people, and that MHL enhances help-seeking attitudes [9].

Students who enroll at the University of Jaffna come from different socio-economic backgrounds and diverse communities. As with any transition, they are bound to face psychological challenges, leading to unfavourable consequences such as dropouts, substance use, deliberate self-harm, and depression. This is reflected in recent studies showing a high prevalence (70%) of mental health issues among students at University of Jaffna [10]. This study aimed to assess MHL among first-year undergraduate students at University of Jaffna-as the results would better reflect the level of MHL acquired from school. It would also provide opportunity for intervention, if required.

Methods

This institution-based descriptive cross-sectional study was carried out among 541 first-year undergraduate students who were proportionally selected from ten faculties and the Unit of Siddha Medicine of the University of Jaffna.

A self-administered questionnaire (in either Tamil or Sinhala) that consisted of a section on sociodemographic details and a locally developed MHL scale was used to collect data. The MHL scale was developed after an extensive review of available MHL questionnaires and validated by experts in the field. This scale had 9 sections: Knowledge regarding mental wellbeing, Identifying mental health problems, Causes and contributory factors, Symptoms, Interventions, Misconceptions and stereotypes, Attitudes regarding mental illness, Willingness to help, and Help-seeking.

Data were analyzed in SPSS Statistics, version 23 (SPSS Inc. Chicago, IL). Chi-square tests and One-way ANOVA were performed to determine significance. Tukey's HSD was used to probe the differences following a significant One-way ANOVA.

All procedures were conducted with the approval of the Ethics Review Committee of Faculty of Medicine, Jaffna (J/ERC/22/138/NDR/0279).

Results

All 541 of the approached students responded to the study. Their ages ranged between 19 and 26 years (mean 22, SD 1.0). Among them, 63 (12%) had personal experience with mental health issues; either they themselves or someone in their family had mental health issues. Breakdown by province, gender, religious identity, and GCE Advanced level (A/L) stream are given in Figure 1 and Table 1.

Table 1. Characteristics of the students

Factors	n	%
Gender		
Female	366	67.7
Male	175	32.3
Religious identity		
Buddhism	223	41.2
Christianity	39	7.2
Hinduism	229	42.3
Islam	41	7.6
Others/Do not want to declare	9	1.7
G.C.E A/L stream		
Arts	163	30.2
Biology	134	24.8
Commerce	70	12.9
Mathematics	116	21.5
Technology	57	10.6
Faculty		
Agriculture	30	5.5
Allied health sciences	45	8.3
Arts	121	22.4
Engineering	30	5.5
Hindu studies	11	2.0
Management	70	12.9
Medicine	40	7.5
Performance and Visual arts	31	5.7
Science	86	16.0
Siddha medicine	18	3.3
Technology	59	10.9

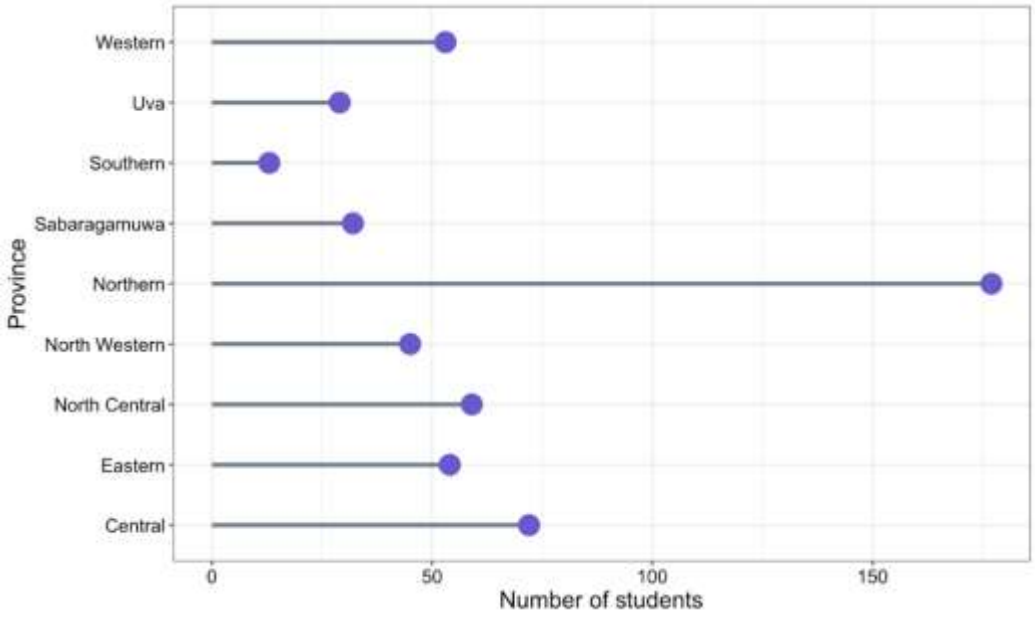

Figure 1. Distribution of students by province

Knowledge

The first five sections of the MHL scale consisted of 40 statements covering various aspects of mental wellbeing, problems that need professional help, causes, symptoms, and interventions related to mental illnesses. Correct responses were given one point. Total points were taken as a composite measure of knowledge.

Across all sections, students scored an average of 28.81 ($SD = 4.80$), out of a total possible score of 40, thus indicating reasonable overall knowledge. The total score was higher for females ($[F(1,538) = 13.29, p < .001, {\eta_p}^2 = 0.02]$. Scores of all sections assessing knowledge differed according to the GCE A/L stream ($p < .001$ for all), with students from the biology and arts streams scoring higher in all sections, while students from mathematics stream scored lower. Scores did not vary significantly based on personal experience with mental health issues.

On closer inspection, scores of all sections except the causes for mental illnesses, showed statistically significant differences according to the religious identity of students, though the patterns were not consistent: for example, students having Buddhism as their religious identity scored more in recognizing problems needing professional help, but not in other areas.

When analyzing selected individual statements, students having personal experience with mental health issues were more likely to correctly indicate that being withdrawn from usual social interactions could indicate the need for professional help, than students who did not have such personal experience($p < .01$). Further, biology stream students correctly indicated the involvement of genetic factors in mental illnesses, while both the arts and biology streams students identified hallucinations as a feature of mental illnesses ($p \leq .05$ for both).

Attitude

Sections six through eight of the MHL scale assessed attitude towards mental health problems. They covered misconceptions and stereotypes, attitudes towards mental illnesses, and willingness to help people with mental ailments, and their responses were assessed based on percentage.

The misconception that mental illnesses are caused by black magic appeared to be more prevalent among students with Buddhism as their religious identity, students from the mathematics stream, and male students. More females than males indicated that mental illnesses are a result of a weak mind and people with mental illness are always aggressive. More students with a religious identity of Buddhism disagreed that psychotropic drugs should be taken throughout life, children will not be affected by mental health issues, and traditional healing is more efficient than medications for mental illnesses. However, they felt people with mental illnesses could overcome mental illness if they so wished. Male students as well as students from the mathematics stream felt that marriage could cure mental illnesses at a young age. Overall, students from biology stream appeared to have less misconceptions about mental illnesses.

More males indicated they would feel ashamed if a family member is suffering from mental illness, and that they would not allow a family member to marry someone with mental illness. However, they indicated that they were not scared of talking to a person with mental illness. Students with Buddhism as their religious identity disagreed with statements indicating that it is difficult to be friends with a person with mental illness, that people with mental illness will deny their illness, and that it is scary to talk with people suffering from a mental illness. More

students in the mathematics stream indicated that they would feel ashamed if a family member had mental illness.

Compared to males, more females indicated that if someone they knew had mental health issues, they would direct them towards mental health professionals, and that they would be there for those who are in a crisis. Students with the religious identity of Buddhism responded that they would do anything for a person with mental illness.

Practice

The ninth section of the MHL scale assessed help-seeking behavior of the students. They were asked to indicate the sources they would be willing to seek help from, and the sources they know how to contact. Popular choices for seeking help appeared to be family and friends, preferred by over 90%. Mental health/medical professionals were not as popular (53%). Religious leaders (21%) and emergency/helpline numbers (8%) were remarkably less preferred (Table 2). Notably, students with Buddhism as their religious identity seemed more willing to approach mental health professionals ($p = .001$).

Table 2. Sources from which the students would like to obtain help by selected sociodemographic factors - %

Sociodemographic factors	Parents (mother/father/both)	Brother/Sister	Other family members or relatives	A friend	Someone in an intimate/close relationship	School teacher	A mental health resource person	Family doctors/General practitioner	Psychiatrist	Religious leader/ clergy	Emergency/helpline number	Will not seek help from anyone
Entire sample	92	73	28	71	51	27	53	28	42	21	8	3
Gender												
Female	92	76	27	68	52	24	53	24	40	18	6	2
Male	91	65	28	76	48	35	53	36	47	27	13	4
Religious identity												
Buddhism	92	71	30	71	51	35	64	34	36	33	16	5
Christianity	92	82	33	67	38	13	36	21	49	28	5	5
Hinduism	92	73	23	72	50	24	44	24	43	7	2	1
Islam	90	78	37	63	68	18	58	28	58	23	8	-
Do not want to declare	87	37	-	75	38	50	50	25	63	38	-	-
A/L Stream												
Arts	93	73	21	65	51	21	56	26	49	11	2	1
Biology	93	75	37	71	53	33	57	31	47	25	14	4
Commerce	93	75	28	75	45	23	36	22	30	20	4	3
Mathematics	90	70	30	74	53	33	56	38	43	28	14	7
Technology	91	65	16	60	44	23	47	14	23	25	5	-

In general, students appeared to be aware of the student counsellor system but were not aware of the diverse service providers and systems within and outside the university (Table 3).

Table 3. Sources the students knew how to contact for help by selected sociodemographic factors - %

	Student counsellor	Student mentor	University wellbeing center	Counsellor(outside the university)	Counselling center	A doctor specializing in mental health	Psychiatrist	Emergency helpline number	Trusted website
Entire sample	53	35	33	19	20	31	29	16	12
Gender									
Female	55	34	34	18	19	31	27	13	9
Male	49	37	31	21	22	32	35	23	19
Religious identity									
Buddhism	40	26	22	25	25	36	21	19	12
Christianity	74	46	44	5	13	36	41	10	10
Hinduism	62	44	42	14	18	26	35	12	13
Islam	55	23	30	25	15	28	38	23	5
Do not want to declare	38	25	25	25	25	50	25	25	13
A/L Stream									
Arts	63	41	42	19	25	32	43	11	10
Biology	46	41	27	20	20	29	23	22	8
Commerce	70	45	45	14	10	29	25	12	17
Mathematics	48	27	29	21	19	33	25	19	13
Technology	30	7	14	19	19	32	19	14	14

Discussion

Considering the representative nature of the sample, meaningful insights can be gained from the results. This study found students to have reasonable knowledge on mental health and illnesses. No overarching deficiencies were noted in the other sections of the MHL scale either. However, while looking at specific student characteristics, several patterns stood out.

Previous studies have indicated personal experience with mental health issues to be associated with greater MHL[11]. However, this was not observed in the current study, except that this subpopulation significantly differed from the others by correctly identifying social withdrawal as an indicator for professional help.

Another important aspect was observed in help-seeking behaviour: students appeared to be reluctant to seek help from mental health professionals and were not aware of how to contact

mental health professionals outside the university. These observations might indicate lack of MHL and cultural reluctance to seek professional help for mental health issues [12].

Females demonstrated significantly greater knowledge regarding mental health issues, mirroring findings of a recent study[13]. Students with Buddhism as their religious identity were better at identifying issues needing professional help. However, they were not as well-informed regarding symptoms and interventions for mental illnesses. Although they possessed certain misconceptions, they were more inclusive of people with mental health issues. The A/L stream of the students seemed to influence their MHL. Students from the biology stream performed consistently better across all sections. Although the overall score demonstrated reasonable knowledge, students from the mathematics stream scored less in the knowledge sections. Meanwhile, students from the arts stream demonstrated more knowledge, which was, in certain areas, comparable to students from the biology stream. This suggests a systematic difference in knowledge across disciplines and highlights the need for MHL to be provided at schools for all students.

It is crucial to note that, at present, there is no place for MHL in the curricula of Sri Lankan schools and universities. Yet, MHL is of vital importance for first-year undergraduates as it has the potential to improve their overall wellbeing and prepare them to effectively face mental health-related challenges as they enter and navigate higher education. The high prevalence of mental health issues (63 – 70 %) among university students, as shown by recent [10] and older [14] studies carried out in Sri Lanka, indicate a clear need to intervene. If resources are not provided at the school-level, they should at least be provided by universities for all students as they begin their higher education. The gap between knowledge and the practice (of help-seeking) warrants an in-depth study to understand students' perception of barriers to seeking help.

Acknowledgment
We wish to thank the Vice Chancellor and Deans of the faculties for granting permission to carry out the study, and the staff of the Department of Psychiatry for assisting with logistics.

Conflict of Interest
None of the authors have any conflicts of interests, financial or otherwise, to disclose.

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CP 03

Pattern of parenteral antibiotic consumption in in-patient units over five years at Teaching Hospital Jaffna

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Abstract

Background and objective: Inappropriate use of antibiotics increases the risk of antimicrobial resistance. Data on antibiotic consumption provides basic information for surveillance. This study describes the pattern of parenteral antibiotic consumption in in-patient units at Teaching Hospital Jaffna (THJ) over a period of five years.

Methods: It was a retrospective analysis of parenteral antibiotic consumption from 2018 to 2022. Data were extracted from the pharmacy database of THJ. The consumption volume of antibiotics was expressed in defined daily dose (DDD) which was calculated using the Anatomic Therapeutic Classification (ATC)/DDD system of the World Health Organization Collaborating Centre for Drug Statistics Methodology. Inpatient antibiotic consumption was expressed in DDD/100 admissions/ year. The WHO's AWaRe classification (Access, Watch, Reserve) for antibiotics was used to describe the pattern of antibiotic consumption. One-way ANOVA was performed to determine the significance of changes over a period of time. A p value ≤ 0.05 was considered statistically significant.

Results: Almost all parenteral antibiotics (99.3%) were consumed by in-patient units. Proportion of consumption of oral and parenteral antibiotics in in-patient units was 1:1. Consumption of Access, Watch and Reserve groups of parenteral antibiotics were 60.7%, 38.3% and 0.3% respectively, during the five-year period, consistent with WHO recommendations. Penicillin was the most commonly consumed parenteral antibiotic group and amoxicillin+clavulanic acid was the most frequently consumed single antibiotic. Parenteral antibiotic consumption rate was on the decline except in 2020 and 2021 during COVID-19 pandemic, when an increase was observed. An overall decline in the rate of consumption of parenteral antibiotics was observed (from 180.7 to 125.7 DDD/100 admissions between 2018 and 2022). These changes were not statistically significant.

Conclusions: Parenteral antibiotic consumption rate at THJ was in line with World Health Organization's recommendation based on the AWaRe framework.

Keywords: Parenteral antibiotics, Antibiotic consumption, Defined daily dose, AWaRe classification

Introduction

Antibiotics are one of the most commonly prescribed medications and their consumption increased by 65% globally between 2000 and 2015 [1]. The major concern with antibiotics is the development of antibiotic resistance. The burden of infectious diseases is high in low- and middle-income countries (LMICs), which also contributes to the risk of developing antibiotic resistance [2]. Overuse of antibiotics in LMICs is a global health concern [3].

Surveillance of antibiotic consumption is important to optimise antibiotic use. Consumption data provide basic information for surveillance and monitoring [4]. Recognising the need for global guidance on appropriate use of antibiotics, the World Health Organization (WHO) has introduced the AWaRe (Access, Watch, Reserve) classification of antibiotics, which is used as a monitoring tool for antibiotic stewardship. The Access group includes narrow spectrum antibiotics generally recommended as first- and second-choice agents for commonly encountered infections. They should be available and affordable in all countries. The Watch group includes broad-spectrum antibiotics with a higher resistance potential that are recommended for a specific, limited number of indications. The Reserve group represents last resort antibiotics that should only be used if other antibiotics do not work anymore. The WHO recommends that the Access group should represent at least 60% of overall antibiotic use [4-5].

Parenteral antibiotics are generally used in severe infections and in patients who are unable to take oral medications [6]. Use of parenteral antibiotics is not only associated with increased cost but also the risk of unwanted effects [6-7]. Information on parenteral antibiotic consumption would help to take measures to optimise the use of parenteral antibiotics.

A few studies have evaluated antibiotic consumption in Sri Lanka [8-9]. They suggest that more than 60% of antibiotics consumed in the public sector belong to the Access group [8-9]. None of these studies have described parenteral antibiotic consumption in Northern Sri Lanka. This paper describes the pattern of parenteral antibiotic consumption in in-patient units at Teaching Hospital Jaffna (THJ), the largest tertiary hospital in the Northern Province, over a five-year period.

Methods

It was a retrospective analysis of parenteral antibiotic consumption from 2018 to 2022. We extracted the supply data from the pharmacy database of THJ. The consumption volume of antibiotics was expressed in defined daily dose (DDD) at level 5 of the Anatomic Therapeutic Classification (ATC). Number of daily doses were calculated using the ATC/DDD system of the WHO Collaborating Centre for Drug Statistics Methodology. In-patient antibiotic consumption was expressed in DDD/100 admissions/year [4]. One-way Analysis of Variance (ANOVA) was performed to determine the significance of changes over time. A p value ≤ 0.05 was considered statistically significant.

Results

We analysed parenteral antibiotic consumption from 2018 to 2022 at THJ. Table 1 shows the antibiotic consumption (total, oral, parenteral consumption) by year. Overall, parenteral antibiotics contributed to 14% of total antibiotic consumption during the five-year period. Almost all parenteral antibiotics were consumed by in-patient units, with less than 2% consumed in the outpatient department. Therefore, subsequent analysis focused on in-patient parenteral antibiotic consumption. In in-patient units, consumption of oral (47.7%) and parenteral (52.3%) antibiotics was more or less equal.

Table 1 Antibiotic consumption at Teaching Hospital Jaffna

	Defined daily dose-DDD (%)				
	2018	**2019**	**2020**	**2021**	**2022**
Total consumption	1212995.8 (100)	1301399.2 (100)	1119255.9 (100)	954264.8 (100)	1124770.3 (100)
Oral antibiotics	1054708.6 (87.0)	1133728.9 (87.1)	968512.5 (86.5)	799450.5 (83.8)	951096.7 (84.6)
Parenteral antibiotics	158287.2 (13.0)	167670.3 (12.9)	150743.5 (13.5)	154814.3 (16.2)	173673.6 (15.4)

Proportion of Access and Watch parenteral antibiotics ranged from 56.2% to 65.2% and from 33.5% to 43.3%, respectively, during the five-year period (Fig. 1). The changes in the proportions of Access and Watch group antibiotics over the five-year period were not significant. Reserve group (0.3%) and unclassified (0.7%) antibiotics contributed to around 1% of the total consumption during the five-year period.

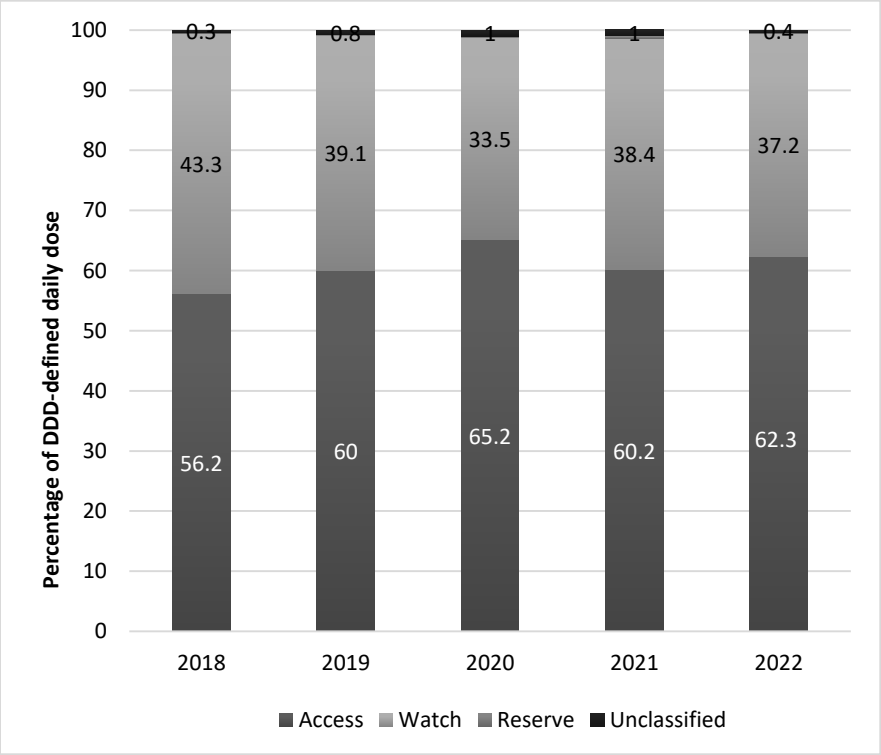

Fig. 1 Consumption of parenteral antibiotic in the Access, Watch and Reserve groups over a five-year period

The top ten antibiotics contributed to more than 80% of total parenteral antibiotic consumption (Fig. 2); the same ten antibiotics were consumed in all years except 2020 and 2022. When considering ATC level 3, beta lactam antibiotics contributed to about three-fourths of the total parenteral antibiotic consumption. Penicillin (30%-50%) was the most commonly consumed antibiotic group followed by cephalosporins (15%-30%). The most consumed single antibiotic was amoxicillin+ clavulanic acid, except in 2018, when metronidazole was the most consumed.

Trend of parenteral antibiotic consumption in in-patient units over the five-year period is shown in Fig. 3. Although there was an increase in the rate of parenteral antibiotic consumption in 2020 and 2021, an overall decline in the rate of consumption of parenteral antibiotics was observed (from 180.7 DDD/100 admissions in 2018 to 125.7 DDD /100 admissions in 2022). These changes were not statistically significant.

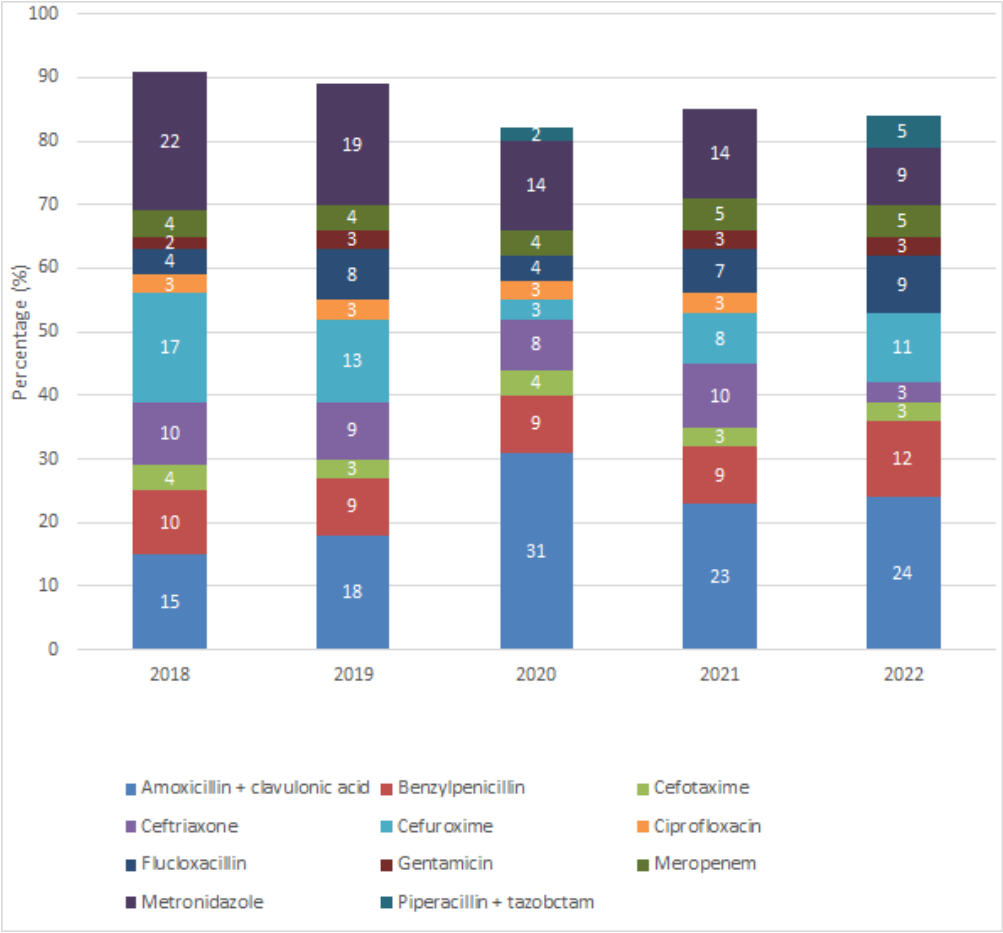

Fig. 2 Parenteral antibiotics consumed in in-patient units from 2018 to 2022

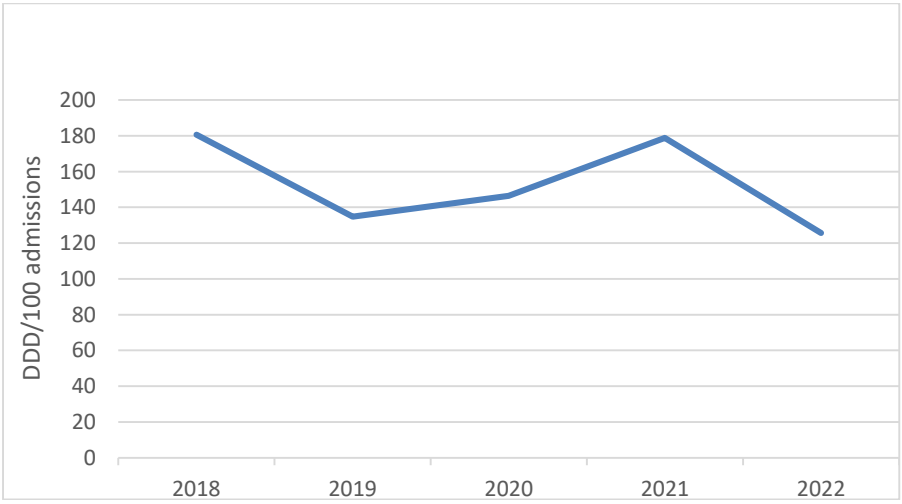

Fig. 3 In-patient parenteral antibiotic consumption rate

Discussion

In this study parenteral antibiotics contributed to less than one fifth (14%) of total antibiotic consumption at THJ. A similar finding (12%) was reported from a secondary healthcare facility in Ghana [10]. Consumption of oral and parenteral antibiotics in-patient units was almost equal in our study. Studies conducted in China and Azerbaijan have also reported equal utilisation of oral and parenteral antibiotics among in-patients [11-12]. This observation is not unexpected as in-patient care is required for serious infections which are often treated with parenteral antibiotics. The overall consumption of parenteral antibiotics at THJ is on the decline although there was a rise in 2020 and 2021 (Fig. 2). Similarly, a rise in antibiotic consumption was reported during the COVID-19 pandemic in other parts of the world [13].

Our study indicates that parenteral antibiotic consumption at THJ was in line with the WHO target during the five-year period [5]. We found that majority (60%) of parenteral antibiotics consumed belonged to the Access group and that the Watch group contributed to 40%. In contrast, the Watch group of parenteral antibiotics were the most frequently consumed in a tertiary care hospital in Nepal (57.4%). Meanwhile, only about 0.3% of parenteral antibiotics belonged to the Reserve group in our study whereas in the Nepal hospital, 4.9% was in the Reserve group [7].

The top ten parenteral antibiotics consumed in THJ were amoxicillin+clavulanic acid, metronidazole, cefuroxime, benzylpenicillin, ceftriaxone, flucloxacillin, meropenem, cefotaxime, ciprofloxacin and gentamicin. Likewise, the above-mentioned antibiotics were the most frequently consumed antibiotics reported in a study on antibiotic consumption in the state sector of Sri Lanka [8] and two studies conducted in Nepal and Romania [7, 14].

In the present study, a substantial reduction of parenteral antibiotic consumption was observed in 2022 (125.7 DDD/100 admissions) when compared to 2018 (180.7 DDD/100admissions). Unlike our finding, an increase in the rate of consumption of parenteral antibiotics (172.1 DDD/100 admissions in 2017 and 190.2 DDD/100 admissions in 2019) was observed in a study describing the 3-year annual consumption of parenteral antibiotics at a tertiary hospital in Nepal [7]. These observations may indicate more rational consumption of antibiotics at THJ, although reduced availability due to the economic crisis could have also contributed to the reduction in consumption rate of parenteral antibiotics in 2022.

Conclusion

Though there was an increase during the COVID-19 pandemic, overall, the rate of consumption of parenteral antibiotics in in-patient units at THJ has shown a decreasing trend over a period of five years. Pattern of consumption of parenteral antibiotics was on par with WHO's AWaRe target. A sustainable antibiotic stewardship and surveillance system would further improve antibiotic utilisation.

Acknowledgement

We thank Mr. Rajadurai Surenthiran, Senior Pharmacist, and Ms. Sumana Katheramalai, Chief Pharmacist, of Teaching Hospital Jaffna.

Conflict of interest

None of the authors have any conflict of interest.

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CP 04

Prevalence and associated factors of distress and coping strategies among school-going late adolescents in Kilinochchi South Educational Zone

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Abstract

Background and objective: Distress significantly impacts the daily lives of adolescents by disrupting their working capacity, academic performance, and contributing to comorbidity. The development of distress is associated with various day-to-day life factors and can lead to harmful consequences. The aim of this study was to determine the prevalence and associated factors of distress and coping strategies among school-going late adolescents (Grade 12 and 13) in Kilinochchi South Education Zone.

Method: A descriptive cross-sectional study was conducted among 593 adolescents aged between 17 to 19 years, using multi-stage probability proportionate cluster sampling. Data were collected using a self-administered questionnaire, which included the Kessler Psychological Distress Scale (K10), the Modified Scale of Coping Inventory for Stressful Situations (CISS), and questions to evaluate associated factors. The relationship between distress and associated factors, as well as coping strategies, was assessed by the chi-square test and independent sample t-test. A p value ≤ 0.05 was considered significant.

Results: The study sample comprised 230 (38.8%) males and 363 (61.2%) females. The prevalence of psychological distress among the participants was 33.1% (n=196; 95% CI 29.3-37.0). Psychological distress was significantly associated with being female (p=0.012), having a single parent family without a father (p=0.008), father's employment (p=0.022), mother's employment (p=0.037), living conditions (p=0.025), parents suffering from chronic illnesses (p=0.022), achieving lower than expected marks in the last examination (p<0.001), participating in extracurricular activities (p=0.003), perceiving teachers as not helpful (p<0.001), experiencing favoritism from teachers (p<0.001), and having a history of alcohol consumption (p=0.024). In the sample, 445 (75%) had high skills in coping and 148 (25%) had medium skills in coping. There were no students with low skills in coping. The majority of distressed students (84.2%) had high skills in coping while 11.8% of distressed students had medium skills in coping (p<0.001).

Conclusion: A substantial proportion adolescents had distress. Contributors to distress include female gender, parental factors and academic burden. Level of coping skills was high but varied with distress level.

Key words: Psychological distress, Adolescents, Coping strategies, Kilinochchi.

Introduction

Adolescence is a transitional phase marking the shift from childhood to adulthood, characterised by significant physical, biological, and psychological transformations. Late adolescence refers to the ages group between 15 and 19 years (1). During this period, individuals undergo substantial changes in their social dynamics, cultural expectations, and

perceptions. Physical growth, including sexual maturation, is a prominent aspect of adolescence, often influencing the initiation of intimate relationships (2).

There are 1.3 billion adolescents worldwide, more than ever before, making up 16 percentage of the world's population (3). Nearly 80% of adolescents live in developing countries, and tend to make up a large proportion of the population (4). The estimated number of adolescents in Sri Lanka is 3.8 million comprising 16% of the total population (5).

Globally mental health conditions constitute a major burden of disease among adolescents. Mental health conditions are a major public health challenge, affecting the daily activities of adolescents including their school and work performance, relationships with family and friends, and involvement in the community (6).

The Northern Province has 13 Education Zones including two Education Zones in Kilinochchi district. To our knowledge no prior research has been done in Kilinochchi district regarding adolescent's mental health. Kilinochchi is one of the poorest districts in Sri Lanka having been affected by several natural and man-made disasters in the last several decades. There are a significant number of single parent families in the district. At 34.81/100,000 population, the suicide rate of Kilinochchi was two folds higher than the national rate in 2022. Therefore, it is very important to assess mental wellbeing and coping capacity among adolescents. The objective of the study was to determine the prevalence and associated factors of distress and coping strategies among school-going late adolescents in Kilinochchi South Education Zone.

Methods

A descriptive cross-sectional study with an analytical component was conducted in Kilinochchi South Educational Zone. Data collection was conducted from 2nd to 17th September 2023. The study population was students of grade 12 and 13 (A/L 2023 and A/L 2024 batches) in 67 government schools in Kilinochchi South Education Zone. The population size was 2461 (male 1007, female 1454). Of them 2052 (83%) students studied in type 1AB schools and 409 (17%) students in type C schools. The required sample size was 613. Multi stage probability proportionate cluster sampling was used to select the sample. Data collection involved the use of a self-administered questionnaire, which included the Sri Lanka-validated Kessler Psychological Distress Scale (K10) to determine the prevalence of distress (7), Sri Lanka-validated Modified scale of Coping Inventory for Stressful Situations (CISS) to assess coping skills (8), and questions on associated factors. A K10 of $\geq$16 was considered positive for psychological distress. The CISS consists of three subdomains: problem-focused subdomain, emotion-focused subdomain and avoidance subdomain. Each question has a maximum score of 4 and minimum 1. A score 0 to 46 indicates low skills in coping, 47 to 93 indicates medium skills in coping and 94 to 140 indicates high skills in coping. In addition, the level of coping skills can be measured subdomain wise by this tool. The relationship between distress and associated factors, as well as coping skills, was assessed by the chi-square test and independent sample t-test. A p value $\leq$0.05 was considered statistically significant. Ethical clearance was obtained from the Ethics Review Committee of the Post graduate Institute of Medicine, University of Colombo.

Results

The study sample comprised 593 school-going adolescents aged 17 to 19 years and the response rate was 94.7%.

Table 1 Socio demographic characteristics of study participants (n= 593)

		n	%
Gender	Male	230	38.8
	Female	363	61.2
Age (Years)	17	280	47.2
	18	298	50.3
	19	15	2.5
Ethnicity	Tamil	588	99.2
	Muslim	4	0.7
	Singhalese	0	0
	Burger	1	0.1
Religion	Hindu	476	80.3
	Christian	110	18.5
	Islam	4	0.7
	Buddhist	0	0
	Do not declare	3	0.5

There were 230 (38.8%) males and 363 (61.2%) females. The mean age of students was 17.5 years (SD ± 0.55). In the sample, 11.8% did not have their fathers, 4.6% did not have their mothers and 1.2% did not have both parents. Among the fathers, 14.2% were unemployed and 71.3% of mothers were housewives. A quarter (25.8%) of the sample reported their father consumed alcohol.

With respect to academic burden, 17.5% of adolescents felt parental pressure to achieved scholastic accolades and 18.2% felt they had too many academic assignments. Over two-thirds (68.1%) of the sample got lower marks than expected in the last examination. One fifth (19.7%) felt that extracurricular activities affected their academic performance, 8.9% reported that teachers were not helpful and 31.9% believed teachers showed favoritism. Nearly half the sample (49.7%) felt that disciplinary measures were excessively strict at schools.

Table 2. Categorization of the participants according to the presence of psychological distress (n= 593)

Psychological distress	n	%
Positive (K10 score ≥ 16)	196	33.1
Negative (K10 score <16)	397	66.9

A K10 of ≥16 was considered positive for psychological distress. The prevalenceof psychological distress was 33.1% (n= 196; 95% CI 29.3-37.0).

Table 3. Association of psychological distress with various factors (n=593)

	n	Psychological distress		Significance
		Not distressed	distressed	
Gender				X^2= 6.309
Male	230	168 (73.0)	62 (27.0)	df= 1
Female	363	229 (63.1)	134 (36.9)	p= 0.012
Age				
17	280	198 (70.7)	82 (29.3)	X^2= 3.469
18	298	189 (63.4)	109 (36.6)	df= 2
19	15	10 (66.7)	5 (33.3)	p= 0.176
Father alive				X^2= 7.122
Yes	523	360 (68.8)	163 (31.2)	df= 1
No	70	37 (52.9)	33 (47.1)	p= 0.008
Father's occupation				X^2= 5.214
Employed	514	353 (68.7)	161 (31.3)	df= 1
Unemployed	79	44 (55.7)	35 (44.3)	p= 0.022
Mother's occupation				X^2= 4.356
Employed	170	103 (60.6)	67 (39.4)	df= 1
Housewife	423	294 (69.5)	129 (30.5)	p= 0.037
Living with whom				
With both parents	440	312 (70.9)	128 (29.1)	X^2= 12.338
With single parent	105	57 (54.3)	48 (45.7)	df= 2
Others	48	28 (58.3)	20 (41.7)	p= 0.002
Do parents follow monthly clinic?				X^2= 5.207
Yes	219	134 (61.2)	85 (38.8)	df= 1
No	374	263 (70.3)	111 (29.7)	p= 0.022
In the last examination did you get lower marks than expected?				X^2= 14.705
Yes	404	250 (61.9)	154 (38.1)	df= 1
No	189	147 (77.8)	42 (22.2)	p= <0.001
Do you think participating in extracurricular activities affects your academic performance?				X^2= 8.549
Yes	117	65 (55.6)	52 (44.4)	df=1
No	476	332 (69.7)	144 (30.3)	p= 0.003
Do you feel your teachers are not helpful?				X^2= 19.639
Yes	53	21 (39.6)	32 (60.4)	df= 1
No	540	376 (69.6)	164 (30.4)	p= <0.001
Do the teachers show favoritism?				X^2= 26.603
Yes	189	99 (52.4)	90 (62.5)	df= 1
No	404	298 (73.8)	106 (26.2)	p= <0.001
Have you ever consumed alcohol?				X^2= 5.092
Yes	31	15 (48.4)	16 (51.6)	df= 1
No	562	382 (68.0)	180 (32.0)	p= 0.024

CISS was used to categorise students based on their level of coping skills. Of 593 students, 445 (75%) had high skills in coping and 148 (25%) had medium skills in coping. There were no students with low skills in coping. When considering domain wise coping strategies, 97% of the sample had high skills in problem-focused coping, while a lower proportion had high skills in emotion-focused (23.9%) and avoidance coping (47.6%) (Tables 4 and 5).

Table 4 Level of coping skills by the presence of psychological distress

Level of coping	Psychological distress					
	Not distressed		Distressed		Total	
	n	%	n	%	n	%
High skills	280	70.5	165	84.2	445	75.0
Medium Skills	117	29.5	31	11.8	148	25.0
Low Skills	0	0.0	0	0.0	0	0.0
Total	**397**	**100.0**	**196**	**100.0**	**593**	**100.0**

X^2= 13.063; df= 2; p< 0.001; OR= 2.224 (95% CI= 1.432-3.454)

The majority of distressed students (n= 165, 84.2%) had high skills in coping while 11.8% of distressed students had medium skills in coping (p= <0.001). Level of problem-focused coping skills and level of emotion-focused coping skills was associated with the presence of distress (p≤0.05) (Tables 4 and 5).

Table 5 Domain wise coping strategies by presence of psychological distress

Level of coping	Psychological distress					
	Not distressed		Distressed		Total	
	No.	%	No.	%	No.	%
Problems Focus						
High skill	389	98.0	186	97.0	575	97.0
Medium skill	8	2.0	10	3.0	18	3.0
Low skill	0	0.0	0	0.0	0	0.0
Total	**397**	**100.0**	**196**	**100.0**	**593**	**100.0**
	X^2=4.25;	**df= 2**	**p= 0.039**			
Emotion Focus						
High skill	52	36.6	90	45.9	142	23.9
Medium skill	340	85.6	106	54.1	446	75.2
Low skill	5	1.3	0	0.0	5	0.8
Total	**397**	**100.0**	**196**	**100.0**	**593**	**100.0**
	X^2=78.87	**df= 2**	**p< 0.001**			
Avoidance						
High skill	197	49.6	85	43.4	282	47.6
Medium skill	199	50.1	111	56.6	310	52.3
Low skill	1	0.3	0	0.0	1	0.2
Total	**397**	**100.0**	**196**	**100.0**	**593**	**100.0**
	X^2=2.64	**df= 2**	**p= 0.268**			

Discussion

The prevalence of psychological distress among school-going late adolescents was 33.1% in Kilinochchi South Educational Zone. The prevalence of psychological distress in the general population of Sri Lanka is unavailable, although an online survey following the recent economic crisis suggested that the prevalence of perceived stress among the general population in Sri Lankawas 21.95% (95% CI 15.86-28.05) (9). A study in the Colombo Educational Zone reported a similar prevalence of distress (35.1%) among school-going late adolescents (10). In

the present study, a greater proportion of female students had distress than male students (p=0.012), similar to the Colombo study where more females (35.2%) were found to experience psychological distress compared to males (26.0%), and this difference was statistically significant (p=0.015) (10).

A study in Norway on young adults reported a similar prevalence of 30% among females (11), and a significantly higher prevalence was observed among Indian female adolescents (12). The factors contributing to distress among female adolescents in these studies were related to school attendance,uncertainty about the future, academic burden, peer pressure, and cultural and social expectations. Similar findings were noted in a study conducted among female adolescents in the Galle district (13). This study revealed a relationship between single parenting (without a father) and the level of distress; a significant proportion of students without fathers (47.1%) experienced psychological distress compared to students with fathers (p=0.008). A similar relationship was observed in a recent study conducted in Philadelphia, USA (14).

In our study population, psychological-distress was significantly associated with being female, father not living, not living with parents, and parents having a chronic medical conditions. With respect to the employment status of parents, having an unemployed father was significantly associated with having psychological distress in the present study (p=0.022). Similar findings were reported in a recent study conducted in Europe (15). In contrast, a statistically significant association was identified between mother's employment status and having distress where 39.4% of students with working mothers were psychologically distressed compared to 30.5% of students with mothers who are housewives (p=0.037).

Significant associations were also identified between psychological distress and factors related to academic burden, such as having obtained lower than expected marks in the last examination and certain perception, for instance, that participating in extracurricular activities would affect academic performance, and perceiving teachers as unhelpful or showing favoritism. Having psychological distress was also significantly associated with a history of ever consuming alcohol.

In the present study, a significant number of students with high coping skills belonged to the distressed group (84.2%). This may be attributed to their ability to tolerate problems (16). At the same time, the majority in the non-distressed group also exhibited high coping skills (70.5%). Problem-focused strategies were preferred by both the distressed (97%) and non-distressed (98%)groups with high coping skills.

This study was conducted exclusively among late adolescents attending schools in the Kilinochchi South Education Zone. Therefore, generalizing the findings nationwide is challenging.

Conclusion

A third of the adolescents in the Kilinochchi South Educational Zone had psychological distress. Which could adversely impact their academic performance, achievement of life goals and the economy of the country in future. A high level of coping skills was observed in both distressed and not distressesed adolescents. Counseling services in schools need to be strengthened, and efforts should be made to empower teachers to provide effective counseling to improve mental health and wellbeing among adolescents.

Competing interests
The authors declare that they have no competing interests.

Acknowledgements
Our sincere thanks and gratitude go to all study participants. Further we are grateful to the Postgraduate Institute of Medicine, University of Colombo.

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CP 05

The epidemiology of stroke in Northern Sri Lanka: A population-based descriptive cross-sectional study

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Abstract

Introduction: Stroke is a significant health concern in Sri Lanka, leading to high rates of mortality and morbidity. Healthcare must prioritize prevention and early detection to address this issue. While research on stroke treatment in Sri Lanka is limited, local studies highlight changing trends and risk factors. This study aimed to assess the prevalence of stroke and its risk factors in the Northern Province of Sri Lanka.

Methodology: This population-based cross-sectional study conducted by the NIHR Global Health Research Group on Atrial Fibrillation focused on individuals aged 50 and above in the Northern Province. Using a multi-stage sampling approach, the study recruited a sample size of 10,000 Tamil-speaking participants representing all five northern districts. Data were collected with an interviewer-administered questionnaire. Descriptive statistics was used to determine the prevalence and describe the common risk factors.

Results: Out of 10,000 individuals, 231 had a stroke, resulting in a 2.3% prevalence rate. Among the 231 patients with stroke, mean age was 68.6 (SD 8.6) years, with 54.1% and 45.9% being males and females, respectively. Educational status varied, with most having primary education or less (40.2%). Retirees comprised 47.6% of the group. Common risk factors included hypertension (71.0%), diabetes mellitus (34.6%) and palpitations (30.7%).

Conclusion: Our study revealed a higher stroke prevalence rate (2.3%) in the Northern Province compared to the national rate (1.0%). Patients with stroke had a high prevalence of risk factors such as hypertension, diabetes and heart diseases. These insights highlight the need for tailored primary prevention and management strategies, considering socio-economic factors and specific regional risks, particularly screening programs and rehabilitation services.

Key words: Stroke, Sri Lanka, Elders, Risk factors, Northern Province

Introduction

Stroke is a major health issue in Sri Lanka, with a significant effect on death and illness rates. It is a the fifth highest cause of death in Sri Lanka according to Ministry of Health statistics (1). The impact of stroke goes beyond just deaths - it also results in decreased work capacity and notably raises the expenses related to hospitalization. Additionally, the economic impact of stroke places considerable strain on families and society overall. It is therefore crucial for the healthcare system to prioritize preventive actions and early detection to manage this problem effectively.

While local studies on the epidemiology of stroke are scarce, recent research highlights the increasing prevalence of stroke among young adults in Sri Lanka, shedding light on the changing demographics of stroke occurrence in the country (2). Another study that explored the association between dietary habits and stroke risk in the Asian region, including in Sri Lanka, revealed changes in the contribution of unhealthy diet to the disease burden of stroke by time and place (3). The 2021 Risk Factor Survey conducted by the Ministry of Health

revealed that the prevalence of several risk factors for stroke, including obesity, physical inactivity, alcohol consumption, hypertension, had increased between 2015 and 2021 (4). Moreover, research on the genetic susceptibility to stroke has contributed significantly to understanding the hereditary factors influencing stroke in the Sri Lankan population (5).

The Northern Province of Sri Lanka is located just 22 miles (35km) southeast of India and has approximately 1.3 million permanent residents. It is made up of five districts: Jaffna, Kilinochchi, Mannar, Mullaitivu and Vavuniya. Each district is divided into administrative units called Divisional Secretariats (DS). Each DS is further divided into many Grama Niladhari (GN) divisions. Publicly available healthcare, including medical appointments, medications and medical procedures, are free to all Sri Lankan citizens, including in the Northern Province.

Little is known about the epidemiology of stroke in northern Sri Lanka. Considering the global burden of stroke, the rising prevalence of risk factors and the healthcare system challenges faced by the country, it is imperative to conduct research on the epidemiology of stroke. Therefore, this study aimed to assess the prevalence of stoke and its risk factors in the Northern Province of Sri Lanka.

Methods

Data were obtained from the 'Prevalence of atrial fibrillation (AF) in Northern Sri Lanka' study carried out by the NIHR Global Health Research Group on Atrial Fibrillation (6). This cross-sectional study commenced in June 2020 and was completed in March 2022. Ethics approval was attained from the Ethics Review Committee of the Faculty of Medicine, University of Jaffna.

The study was conducted across all five districts in the Northern Province. In line with similar studies conducted in lower-middle-income countries and considering the growing body of literature on disease prevalence in South Asia, we set the screening inclusion age at 50 years and above, which is below the current recommended practice of 65 years. Therefore, individuals aged 50 years or older who are proficient in Tamil were eligible for screening. As per established methods published elsewhere, individuals with terminal illnesses, those requiring immediate hospitalization, or currently admitted as hospital inpatients, were not included. The team of data collectors comprised a qualified medical doctor and two nursing graduates.

This research employed a sampling methodology that involves multiple stages. The process commenced at the district level, then proceeded to the DS level, and finally reached the GN level. Subsequently, GN divisions were grouped into clusters based on population size, from which one cluster was chosen randomly. Each cluster encompassed 20 households with one participant per household. Initially, an index house within each cluster was selected randomly followed by picking 20 households located on its right side. In cases where there were multiple eligible individuals in a household, the individual whose birthday is closest to the date of visitation was chosen. Census data from 2012 were utilized for selecting both the clusters and index houses within each cluster.

Based on previous evidence, the prevalence of AF in Sri Lanka was estimated to be 1%. A design effect of 2 was applied to account for cluster sampling, with an alpha level set at 5% and a beta level at 20%. To accommodate non-participation, the sample size was increased by 10%, resulting in a minimum requirement of 10,000 participants. Previously conducted research has indicated that the prevalence of stroke is also approximately 1% (7). Therefore,

this sample size was deemed suitable for determining the occurrence rate of stroke in the Northern Province. Descriptive analysis was performed to identify the prevalence of the stroke and describe common risk factors of stroke.

Results

Out of a total sample size of 10,000 individuals, 231 had experienced a stroke, resulting in a prevalence rate of 2.3%. Prevalence of stroke varied by district (Table 1). The highest prevalence was in the Mannar district (3.1%) and lowest in Kilinochchi district (1.8%) but this variation was not significant (X^2=3.2, df=4, p=0.5).

Table 1 Prevalence of stroke across the Northern Province (n=231)

District	n (%)
Mannar	26 (3.1%)
Jaffna	144 (2.3%)
Vavuniya	31 (2.2%)
Mullaitivu	14 (2.1%)
Kilinochchi	16 (1.8%)

The average age was 68.6 (SD ±8.6) years. In terms of gender distribution, there were 125 males (54.1%) and 106 females (45.9%). Among participants, 135 (58.4%) were living with their partner. Evaluation of educational status revealed that 87 (37.7%) had only primary education with 6 (2.6%) having no formal education at all. In the sample, 110 (47.62%) were retired, 91(39.39%) were homemakers, while 23(9.95%) were employed full time (Table 2).

Table 2- Socio-demographic characteristics of stroke patients (n=231)

	n (%)
Gender	
Male	125 (54.1)
Female	106 (45.9)
Marital status	
Living with partner	135(58.4)
Not living with partner	96 (41.6)
Educational level	
University degree & above	5 (2.3)
Diploma	3 (1.3)
GCE A/L	10 (4.3)
GCE O/L	43 (18.6)
Middle school	77 (33.3)
Primary and less	93 (40.2)
Occupation	
Employed	23 (9.9)
Retired	110 (47.6)
Homemakers	92 (39.3)
Other	7 (3.2)

Of the risk factors, 164 (71.0%) had hypertension, 80 (34.6%) had diabetes mellitus, 71 (30.7%) had palpitations, 30 (13.0%) had chronic kidney disease, and 43 (18.6%) had ischaemic heart disease (Table 3).

Table 3. Risk factors of stroke (n=231)

Variables	n (%)
Symptoms	
Palpitations	71 (30.7)
Comorbidities	
Hypertension	164 (71.0)
Diabetes	80 (34.6)
Ischemic heart disease	43 (18.6)
Chronic kidney disease	30 (13.0)
Valvular heart disease	9 (3.9)
Heart failure	1 (0.4)

Discussion

The results of our study in the Northern Province of Sri Lanka have provided significant insights into the prevalence and risk factors associated with stroke in this specific region. The prevalence of stroke was found to be notably higher at 2.3% compared to the 1% occurrence rate observed in other national research studies (8). A study done in India also showed a prevalence of 1.5% (8). This disparity could be attributed to regional variations in stroke occurrence, or it may be a result of the difference in methodology and the substantial sample size employed in our study. Further studies are needed to understand the unique characteristics and challenges associated with stroke in the Northern Province to guide the development of more precise and impactful prevention strategies.

One significant aspect is to consider is the distribution of risk factors in the subsample of patients with stroke. A substantial portion of the participants had hypertension, with 71% of the sample affected. Additionally, the prevalence of diabetes mellitus, at 34.6%, and the presence of ischemic heart disease, at 18.6%, further emphasize the need for strengthening screening programmes to identify these risk factors early. It is worrying that recent risk factor surveys reveal a rising prevalence of obesity, physical inactivity, hypertension, and other risk factors of stroke (4).

Furthermore, the average age of participants who experienced a stroke was found to be 68.6 years. This finding highlights the vulnerability of the elderly population to stroke in the Northern Province and emphasizes the importance of age as a risk factor (9). The educational status of those with stroke also reveal interesting patterns, with a substantial proportion having only received primary education or lower, indicating the potential influence of socio-economic factors on stroke risk (10).

These findings underscore the importance of tailored prevention and management strategies for stroke in the Northern Province. It is evident that interventions focusing on controlling hypertension, managing diabetes, and addressing cardiovascular risk factors can play a crucial role in reducing the burden of stroke in this region. Integrating these insights into healthcare policies and clinical practice can lead to more effective interventions and better outcomes for the population of the Northern Province. In addition, healthy public policies are urgently needed to control the exposure to risk factors, especially among young people (11).

While our study found a high prevalence of hypertension, diabetes mellitus, and cardiovascular conditions in patients experiencing a stroke, future research could focus on evaluating the effectiveness of tailored prevention and management strategies targeting these risk factors specifically within the context of the Northern Province. This could involve conducting longitudinal studies to track the impact of targeted interventions on the prevalence of stroke in the region, as well as assessing the feasibility and acceptability of these strategies within the local healthcare infrastructure.

Another important aspect that warrants further investigation is the influence of socio-economic factors on stroke risk within the Northern Province. Exploring the socioeconomic determinants of health, such as income level, access to education, and employment status, could provide valuable insights into the underlying social disparities that contribute to the burden of stroke in this region. Conducting epidemiological studies that integrate socio-economic indicators into the analysis of stroke prevalence and risk factors could inform the development of more equitable and inclusive public health interventions.

Conclusion

This study revealed a higher stroke prevalence rate (2.3%) in the Northern Province compared to the national rate (1.0%). Patients with stroke had a high prevalence of risk factors such as hypertension, diabetes and heart diseases. These insights highlight the need for tailored primary prevention and management strategies, considering socio-economic factors and specific regional risks, particularly screening programs and rehabilitation services.

Acknowledgement

We acknowledge the contribution of the study participants and the NIHR Global Health Research Group on Atrial Fibrillation Management.

Conflict of interest

The authors have no conflicts of interest to declare.

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CP 06

Multi-morbidities, delivery outcomes, and discharge plans of mothers with gestational diabetes mellitus who delivered at Teaching Hospital Jaffna

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Abstract

Introduction: Gestational diabetes mellitus (GDM) is common and is often accompanied with other comorbidities. This study was carried out to describe the prevalence of GDM, the presence of multi-morbidities, outcomes, and management on discharge of mothers who delivered their babies at Teaching Hospital Jaffna.

Methods: A hospital-based descriptive cross-sectional study was carried out at Teaching Hospital Jaffna using a KoBoCollect-based data extraction form. Secondary data from the Bed Head Tickets (BHT) of mothers who delivered babies between January and June 2023 were extracted. Standard descriptive statistics were applied.

Results: BHTs of 3500 mothers were traced; 14.9% (n=523) mothers had GDM. The median age of mothers with GDM was 31.0 (±5.5) years. Among them, 15.5% (n=81), 9.8% (n=51), and 5.7% (n=30) had pregnancy induced hypertension (PIH), anaemia, and thyroid/other disorders, respectively, and seven mothers had both PIH and anemia. Two mothers had all three morbidities along with GDM. Over a quarter (28.1%, n=147) had a family history of diabetes. The median period of amenorrhea (POA) on delivery was 38 weeks. Just over half (52.5%,

n=275) underwent caesarean section. Ninety (17.2%) mothers had perineal tear(s) during labour. The prevalence of preterm births was 7.8% (n= 41). Low birth weight and macrosomia were observed among 1.5% (n=8) and 0.8% (n=4) of newborns, respectively. Fifty-four neonates (10.3%) required admission to the Neonatal Intensive Care Unit. Two babies were identified with congenital anomalies. On discharge, 39.2% and 4.6% of mothers were referred to antenatal clinics at Teaching Hospital Jaffna and the relevant medical officer of health, respectively.

Conclusion: The prevalence of GDM and comorbidities highlight the need for enhanced screening and management strategies for pregnant women. The significant proportion of mothers with a family history of diabetes suggests a genetic predisposition, indicating the need for targeted education and preventative measures in high-risk populations. The incidence of neonatal and post-partum complications signal the need for vigilance in mothers with GDM during the antenatal period.

Keywords: Gestational diabetes mellitus, Maternal multi-morbidities, Delivery complications, Neonatal outcome, Discharge plan

Introduction

Gestational Diabetes Mellitus (GDM) is defined as "carbohydrate intolerance resulting in hyperglycemia of variable severity with the onset of first recognition during pregnancy" [1]. It is one of the most common metabolic disorders that occurs during pregnancy, affecting up to 13% of pregnancies worldwide [2]. Advanced maternal age (>35 years), maternal overweight/obesity, parental diabetes and previous GDM are associated with developing GDM [3]. GDM comes with significant risks for both maternal and foetal health, including increased chances of developing pregnancy-induced hypertension, preeclampsia, and the need for caesarean delivery. For the fetus, risks include macrosomia, hypoglycemia, and future metabolic disorders.

Despite the wide prevalence, few studies have been conducted to assess the maternal and foetal outcomes of mothers with GDM in Sri Lanka. This study aimed to describe the prevalence of GDM, presence of multi-morbidities, outcomes, and management on discharge of mothers who delivered their babies at Teaching Hospital Jaffna (THJ).

Methods

A hospital-based descriptive cross-sectional study based on secondary data was carried out in THJ in northern Sri Lanka. The Bed Head Tickets (BHTs) of mothers who delivered their babies between January 1st and June 30th 2023 in all four maternity wards (18, 20, 21 and 22) of THJ were traced. A KoBoCollect-based data extraction form including medical comorbidities, delivery complications, maternal, neonatal outcomes, and discharge plan was designed to collect data. Descriptive statistics were used to analyse data. Ethical clearance was obtained from the Ethics Review Committee, Faculty of Medicine, University of Jaffna (J/ERC/23/144/NDR/0288).

Results

Data from 3500 mothers were collected. Among them 523 (14.9%) mothers had GDM. The median age of mothers with GDM was 31.0 years, ranging from 18 to 50 years. In the sample, 15.5% (n=81), 9.8% (n=51) and 5.7% (n=30) of mothers had pregnancy-induced hypertension (PIH), anaemia and thyroid/other disorders, respectively. Seven mothers had both PIH and anaemia. Two mothers had all three morbidities along with GDM (Figure 1). Over a quarter (28.1%, n=147) had a family history of diabetes. The median period of amenorrhea (POA) at delivery was 38 weeks, with an interquartile range of 37+2 and 38+6 weeks. The vast majority of mothers (93.7%, n=490) were admitted for delivery from antenatal clinics of THJ, while the remainder (6.3%, n=33) were transferred from other hospitals.

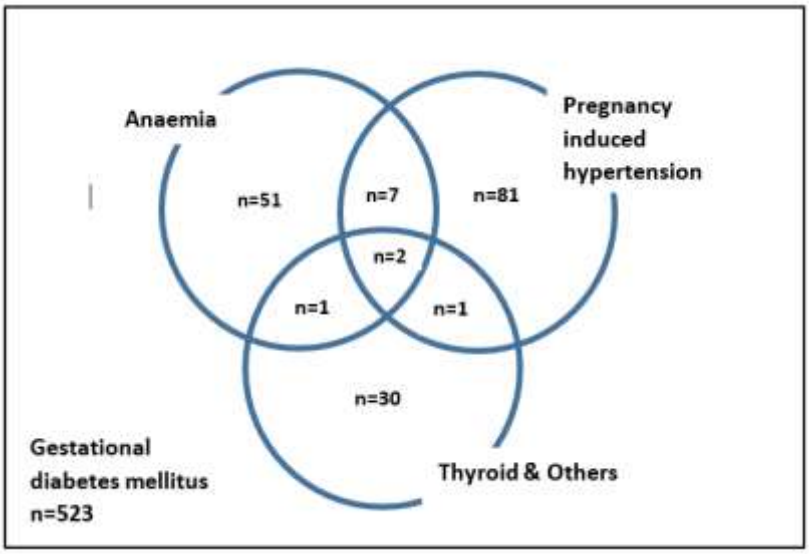

Figure 1: Overlapping multi-morbidity patterns in mothers with GDM

Over half (52.5%, n=275) the mothers underwent cesarean section, while 44.2% had a normal vaginal delivery (44.2%) and 3.3% assisted vaginal delivery. Ninety mothers (17.2%) had perineal tear(s), and 1.1% had postpartum haemorrhage. The prevalence of preterm delivery was 7.8% (n= 41). The median birth weight was 2.95 kg, with an interquartile range of 2.65 to 3.24 kg. The prevalence of low birth weight and macrosomia was 1.5% and 0.8%, respectively. Fifty-four neonates (10.3%) required admission to the Neonatal Intensive Care Unit, and two babies were identified with congenital anomalies. Over half (56.4%) of mothers were discharged from hospital without a plan, while the rest of them were discharged with recommendations (Table 1).

Table 1: Discharge Plan

Discharge plan	n	%
Not mentioned/ No formalities	295	56.4
Plan with a clinic visit at THJ	176	33.7
Discharge with drugs	28	5.3
Referral to respective MOH	24	4.6
	523	100

Discussion

The prevalence of GDM among mothers who delivered at THJ in 2023 was 14.9%. Similar findings were observed in a community-based study carried out in Gampaha district of Sri Lanka, although the prevalence at 13.9% was slightly lower [3], and among Asian women, the prevalence has been reported to be 10.5% [4]. These proportions might be attributable to genetic and lifestyle factors, as Sri Lankan women, being South Asians, are at higher risk of developing GDM [5]. However, a study in the Jayewardenepura Mathugama Medical Officer of Health (MOH) area in the Western Province of Sri Lanka found that 4.7% of mothers had been diagnosed with GDM [6], while another hospital-based study conducted in Thailand showed that the prevalence of GDM was 2.6% [7]. These values are significantly lower than our findings. The differences in prevalence rates may be influenced by variations in study design, diagnostic criteria, and population demographics. Further research is needed to understand the contributing factors and to develop targeted interventions to manage and prevent GDM effectively.

The prevalence of PIH among GDM mothers in our study was 15%. Another Sri Lankan study carried out in De Soysa Hospital for Women in Colombo district revealed a lower prevalence of 7.8% [9]. While the disparity could be due to differences in the study populations, the De Soysa Hospital study included both mothers with pre-gestational diabetes mellitus and GDM, whereas our study focused solely on mothers with GDM. Data from the Family Health Bureau shows that the prevalence of GDM and anaemia are gradually increasing in Sri Lanka, while PIH is on the decline [8]. In contrast, a study by Prakash et al. in Puducherry in India reported a higher prevalence of PIH at 25% among mothers with GDM [10]. These variations could be due to variations in study design, population characteristics, and diagnostic criteria.

Family history of diabetes is another significant risk factor for GDM [11]. In our study, 28.1% of mothers with GDM reported a family history of diabetes, compared to a higher prevalence of 43% reported in a study conducted in Puducherry, India [10]. The higher prevalence of family history in the Indian study suggests that genetic factors may play a crucial role, and emphasizes the need for targeted interventions in populations with a strong family history of diabetes. In our study, the mean maternal age for developing GDM was 31.3 years, consistent with two other Sri Lankan studies [11-12]. The slight variations in age could be attributed to differences in study populations. It is well known that Body Mass Index (BMI) in early pregnancy is a risk factor for GDM. However, we were unable to analyse pre-pregnancy BMI as it was not recorded in the BHTs of mothers with GDM. Hence, it is recommended that pre-pregnancy BMI be documented in BHTs in future to better understand and address this risk factor.

The timing of delivery of women with GDM has been debated by various obstetric professional bodies [13]. The median POA in the present study (38 weeks) was consistent with term delivery, and almost perfectly matched the POA reported from a Colombo study where it was 38.3 (±1.43) weeks [12]. Mothers with GDM mothers are more likely to deliver by caesarean section [11], in line with the findings of our study where the majority (52.5%, n=275) had a cesarean delivery. This proportion was also similar to the caesarean delivery rate among mothers with GDM at the Castle Street Hospital in Colombo where it was 57.7% [14], and that of Thailand where it was 54.0% [7].

The prevalence of preterm delivery was 7.8% (n= 41) in our study, similar to two studies carried out in Colombo district, where it was 5% [14], and 11.7% [12], while such prevalence was remarkably higher in Thailand where it was 16.7% [7]. The mean birth weight was 2.91±0.49 kg, ranging between 0.54-4.38kg, while it was 3.1 ±0.52 kg among Colombo babies [12]. In our study, 10.3% of the babies required admission to the Neonatal Intensive Care Unit, while it was 5% in the Colombo study [14], and 18.3% in the Thai study [7]. Among immediate delivery complications, hypoglycemia was not recorded in our study, although it was 5% among mothers with GDM in a study conducted in Castle Street Hospital for Women in Colombo district [14].

Postpartum women with GDM tend to have more difficulties in dealing with postnatal rehabilitation, baby care, baby feeding and so on [15]. However, none of the studies we reviewed described the discharge plan of mothers with GDM. In the present study, 6.3% of admissions were referrals from other hospitals for advanced delivery management to prevent GDM complications, suggesting that these mothers would be referred back to their local hospitals and MOHs. Although the discharge plan indicated whether mothers would be followed up at the clinic, referred to their respective MOH, or discharged with drugs, the majority of BHTs did not contain discharge plans.

Conclusion

The prevalence of GDM and its associated comorbidities highlight the need for enhanced screening and management strategies for pregnant women. The identification of PIH, anemia, and thyroid disorders as common complications in mothers with GDM underscores the importance of comprehensive prenatal care to address these conditions early. A significant proportion of mothers had a family history of diabetes, indicating the need for targeted education and preventative measures in high-risk populations. Addressing these factors can improve maternal and fetal outcomes and reduce the burden of GDM and its complications. Further research is needed to better understand postpartum management of mothers with GDM, including referral procedures.

Acknowledgement

We acknowledge the support of the Director of THJ, consultants, ward-in charge, and nursing officers at THJ. In addition, we thank the staff of the Statistics Unit and Record Room of THJ for locating the serial numbers of BHTs of the deliveries that occurred at THJ in 2023.

Conflict of interest

Authors declare that they have o potential conflicts of interest.

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CP 07

The International Health Fellowship Programme of the Ministry of Health, Sri Lanka: A case study

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Abstract

Background and Objective: Educational attainment, an indicator of the human capital accumulated by a population, is a primary determinant of a nation's prosperity and global economic competitiveness. The international fellowships managed by the Directorate of International Health (IH), Ministry of Health, Sri Lanka, offer medical officers valuable opportunities to gain foreign expertise and boost their careers. The objective of the study was to describe the international fellowships awarded to medical officers through the Ministry of Health.

Methods: A qualitative case study was carried out at the Directorate of International Health of the Ministry of Health, Sri Lanka. Key informant interviews were conducted with the Director of the unit and five officers in the unit who were involved in compiling the reports of fellowships granted and a desk review was done to gather information.

Results: Out of 126 fellowship programmes offered through the International Health unit, in 2022, 93 fellowships were offered to Medical Officers (MOs). It was observed that out of 93 medical officers who were awarded a foreign tour in 2022, 46% were medical officers, 38% were medical consultants, 9% were directors, and the balance 7% were medical administrators. Of those who received a fellowship, only 40% submitted a report as per Ministry of Health requirements.

Conclusions: Ministry of Health fellowships provide valuable opportunities for staff to gain international exposure. To ensure effectiveness and impact, the Ministry should establish clear goals for fellowship awards and ensure that fellows submit their learnings to the Directorate of International Health, Ministry of Health Unit for evaluation and dissemination.

Keywords: International fellowships, Ministry of Health Sri Lanka, Medical Officers

Introduction

Fellowships are awarded to officers and staff of the Ministry of Health by the Directorate of International Health (IH) under the Management, Development, and Planning Unit at the Ministry of Health. Various international conferences, meetings, and study visits are provided by international agencies and other organizations as opportunities for officers and staff to enhance their knowledge, skills, attitudes, and practices. The Directorate of International Health manages the awarding of fellowships. Medical Officers receive a significant number of fellowships out of all the fellowships awarded by the Ministry of Health. It has been reported that physicians from low- and middle-income countries who train abroad become pioneers in their field when they return home [1,2]. Thus, the international fellowship programme provides MOs with an excellent opportunity to update their knowledge and gain foreign exposure towards improving their professional career. Moreover, this is an incentive that contributes significantly to the improvement of employee performance, and also serve as a method of showing appreciation and recognition for the remarkable contribution of these employees. The objective of this case study is to describe the fellowships awarded to medical officers through

the Ministry of Health. It identifies gaps in the current fellowship awarding mechanism, and proposes recommendations to make it a more productive process.

Methods

A qualitative case study design was used. Key informant interviews with the Director of the Directorate of International Health, Ministry of Health, and the officers in the IH unit who are involved in compiling the reports of fellowships granted. Five participants were selected using standard case sampling methods. For the desk review, documents pertaining to the year 2022 containing the details of the fellowships granted to the Medical Officer category, including Administrative Grade Medical officers, Special Grade Medical officers, and Grade 1 and Grade 11 Medical officers) and the relevant feedback reports were analysed. The database at the Directorate of International Health, Ministry of Health was studied to obtain details of the fellowship programme participants. Administrative clearance was obtained from relevant officials.

Results

The fellowships awarded to medical officers by the Ministry of Health are handled by the Directorate of International Health, Ministry of Health at the Management, Development and Planning Unit under the Deputy Director General (DDG) – Planning.

The international fellowship programmes are offered through international organizations such as the World Health Organization (WHO) and the External Resources Department (ERD) under the Ministry of Finance. Once the programme details are received, they are forwarded to the relevant DDG. Thereafter, the relevant DDG disseminates the programme details and the candidates apply for the fellowships. The relevant DDG then nominates the required number of candidates to obtain the fellowship out of the applications received. Thereafter nominations are sent to the Directorate of International Health, Ministry of Health. Then the nominations and the programme details are discussed at a Fellowship Committee meeting which comprises high-level ministry officials and is chaired by the Secretary of the Ministry of Health. Finally, the Fellowship Committee makes the final decision to award the fellowships to eligible candidates.

Out of 126 fellowship programmes recorded at the IH unit in 2022, Medical Officers were offered 93 fellowships. Of them, 46% were medical officers, 38% were medical consultants, 9% were directors, and the balance 7% were medical administrators (Figure 1).

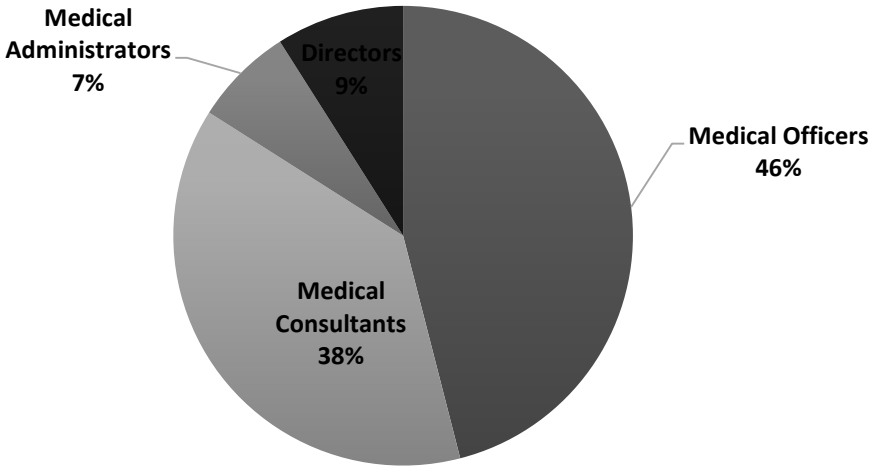

Figure 1. Designations of fellowship recipients in 2022

The types of fellowship programmes awarded to Medical Officers in the year 2022 are described in Table 1.

Table 1. Types of fellowships (n=93)

Fellowship type	n	%
Meeting	47	51
Training	20	21
Workshop	15	16
Conference	9	10
Observational study visit	2	2
	93	100

After completion of the fellowships, the nominated officers are requested to submit a written report according to the format given by the IH unit. Out of 93 recipients, only 40% had submitted a report (Figure 2).

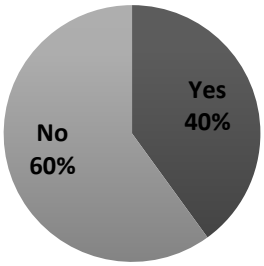

Figure 2. Fellowship recipients who submitted and did not submit a report

The 93 fellowship recipients represented 31 institutions, and most (20%) were from the head office of the Ministry of Health, followed by 18% from unspecified institutions. A further 10% represented the Epidemiology Programme/Campaign/Epidemiological Unit, while 9% were from the Family Health Bureau. There were four individuals representing the Medical Research Institute and three from the Regional Directorate of Health Services (RDHS) Colombo (Table 2).

Table 2. Distribution of the institution represented by the recipients (n=93)

Institution	n	%
Ministry of Health - Head Office	19	20.4
Unspecified institutions	17	18.3
Epidemiology Programme/Campaign Epidemiological Unit	9	9.7
Family Health Bureau	8	8.6
Medical Research Institute	4	4.3
RDHS Colombo	3	3.2
Anti-Malaria Campaign	2	2.1
Base Hospital Colombo East (Mulleriyawa)	2	2.1
Base Hospital Kalmunai - North	2	2.1
National Dengue Control Unit	2	2.1
National Hospital for Respiratory Diseases (Chest Hospital Welisara)	2	2.1
National Programme for Tuberculosis Control & Chest Diseases	2	2.1
RDHS Kandy	2	2.1
Teaching Hospital Kandy	2	2.1
Other	17	18.3
	93	100.0

With respect to travel destinations, the majority of fellowships were located in the South-East Asian region, mostly Thailand (33%), India (25%), Singapore (10%) and Bangladesh (9%) (Table 3).

Table 3. Distribution of fellowships by travel destination (n=93)

Country	n	Percentage %
Thailand	31	33.3
India	23	24.7
Singapore	9	9.6
Bangladesh	8	8.6
Nepal	6	6.5
Switzerland	3	3.2
Timor-Leste	3	3.2
Bhutan	2	2.2
Indonesia	2	2.2
Armenia	1	1.1
Australia	1	1.1
Italy	1	1.1
Japan	1	1.1
United Kingdom of Great Britain and Northern Ireland	1	1.1
United States of America	1	1.1
	93	100.0

Discussion

The awarding of a fellowship from the Ministry of Health provides opportunities for staff to get exposure to new knowledge, best practices, and innovations which would improve individual competencies and through them enhance institutional/ organizational capacity. There are many functions that these fellowships serve apart from merely imparting education. They provide: opportunities to sharpen skills and capabilities to interact with peers; exposure to international networks, foreign languages and cultures; technical expertise and training, for instance, in the use of new equipment; space to explore novel and globally-relevant ideas, and develop consensus in argumentative areas. These competencies and skills can ultimately lead to improvements in health-care delivery and patient outcomes [3–5].

However, we identified a number of gaps in the current process. Overall, the fellowship programme seems to lack clear goals. While there are no clear criteria to guide nominations for the fellowships by DDGs, our desk review did not yield evidence that the fellowships target specific identified gaps in resources or expertise. There are no specific requirements to be fulfilled by recipients, other than to submit a fellowship report. With respect to the latter, we found that 60% of recipients did not even fulfil this basic requirement in 2022. Those that were submitted were often incomplete or illegible. Moreover, fellows lack a platform to share their learnings with colleagues who may benefit from their training/exposure.

Benefits of exposure in a foreign country vary based on the characteristics of participants and the program, as well as the characteristics of the host nation [6]. This likely applies regardless of the home country. An opportunity to participate in a fellowship programme can be considered a motivating factor according to Herzberg's theory of motivation [7]. The international fellowship programme serves as an incentive for medical officers to build their careers. Given the current staffing challenges in healthcare, it is imperative to prioritize staff retention and succession planning strategies, which can be achieved by promoting continued engagement and career development [8]. However, it is doubtful whether participation in

international fellowships can translate to improvements in patient care and outcomes in the absence of effective monitoring and evaluation [9].

Conclusions

The international health fellowship programme of the Ministry of Health offers numerous opportunities for medical officers. Fellows have a responsibility to disseminate the knowledge and training acquired with colleagues for wider distribution of benefits. To address the gaps identified in the current programme, we recommend establishing clear program goals and linking fellowships with specific requirements in the health system. In line with international standards, applicants should submit a statement of intention indicating how their training background and qualifications are suitable for the fellowship and their plans for knowledge dissemination. A pre-fellowship report prepared in collaboration with trainers at the specific international that outlines learning objectives would enhance participant focus. Finally, presentations made by fellows to the Directorate of International Health, Ministry of Health, with top presentations progressing to committee or director meetings, would incentivise and encourage knowledge sharing and accountability on the part of fellowship recipients.

Acknowledgment

The authors gratefully acknowledge the enduring support of the Director and the staff at the Directorate of International Health, Ministry of Health, Sri Lanka.

Conflicts of Interest

The authors have no conflicts of interest to declare.

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CP 08

Exploring the spectrum of gynaecological disorders in geriatric women: A hospital based cross-sectional study

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Abstract

Background and objective: Elderly women suffer from gynaecological disorders due to ageing and hormonal changes in the post-reproductive period. However, there is inadequate evidence in Sri Lanka to deliver better care for geriatric women with gynaecological disorders. Therefore, we assessed the spectrum of gynaecological disorders among geriatric women in two out-patient settings at a tertiary hospital in northern Sri Lanka.

Methods: A hospital-based descriptive cross-sectional study was conducted among 216 women aged 60 years and above who attended the gynaecology and urology clinics at the Teaching Hospital Jaffna. The data were collected using an interviewer-administered questionnaire and data extraction sheet. Analysis was performed in SPSS V26. The chi-square test was used to determine the association of sociodemographic factors with gynaecological disorders (significance level 0.05).

Results: The mean age was 71.11±7.6 years, with the majority living in rural areas (60.2%). Common symptoms were lower urinary tract storage symptoms (77.3%), back pain (76.4%), and lumps at the vulva (74.1%). Less frequent symptoms included abdominal distension (27. 3%), postmenopausal bleeding (15.7%), and vulvar growth/ulcer (3.2%). Common comorbid conditions were hypertension (55.1%), diabetes mellitus (29.6%), and gynaecological conditions such as pelvic organ prolapse (uterovaginal prolapse 59.7%, cystocele 51.9%). Additionally, the study highlighted that 7.9% of women had postmenopausal bleeding with a benign cause, 6.9% had postmenopausal bleeding with a malignant cause in their endometrial assessment, and 13.4% had urogenital infections. There was a significant association between age and cystocele (p=0.004) and uterovaginal prolapse (p=0.007).

Conclusion: Elderly women have notable gynaecological-related symptoms and disorders along with co-morbid conditions. By addressing the medical, social, and economic needs of elderly women, health systems can better support this growing demographic and improve their quality of life. The gynaecological disease burden in the geriatric group should be identified and addressed from the primary care level.

Keywords: Gynaecological disorders, Sri Lanka, Geriatric women, Pelvic organ prolapse.

Introduction

The ageing population is rapidly growing globally, with the proportion of individuals aged 60 years and above projected to increase significantly from 1 billion in 2020 to 1.4 billion by 2030 (1). These demographic changes pose substantial global challenges for health and social systems, necessitating significant adjustments to accommodate the growing number of elderly individuals. In Sri Lanka, one of the fastest-ageing countries in South Asia, 12.3% of the population is already 60 years or older (2).

Elderly women experience unique gynaecological issues due to extended life expectancy and hormonal changes after menopause (3). Annually, approximately 25 million women globally reach menopause, leading to increased vulnerability to various health issues, including vasomotor, urogenital, psychosomatic, and psychological symptoms, and sexual dysfunction (4). Gynaecological disorders in older women, such as vulvovaginal inflammation, genital prolapse, postmenopausal bleeding, malignancies, and bladder function alterations, are often underreported and undertreated due to cultural stigma, lack of awareness and limited access to healthcare (5).

The increasing life expectancy in Sri Lanka, projected at 77.6 years in 2023, underscores the urgency to address the healthcare needs of its ageing female population. By 2030, it is anticipated that 1 in 5 Sri Lankans will be over 60, with women comprising the majority (6). Despite the significant ageing population, there is a lack of evidence on geriatric gynaecological issues in Sri Lanka, particularly in the Northern Province. Thus, this study aimed to assess the spectrum of gynaecological disorders among geriatric women in two outpatient settings at Teaching Hospital Jaffna, the largest tertiary care hospital in northern Sri Lanka.

Methods

This hospital-based descriptive cross-sectional study was conducted at the gynaecological and urology clinics in Teaching Hospital Jaffna from January 2023 to June 2024. All women aged 60 years and above attending the gynaecological and urological clinics were included in this study. The estimated sample size was 327, and a convenience sampling method was employed to select the participants. We were able to recruit 216 participants within the data collection period. An interviewer-administered questionnaire and data extraction sheet were used to collect data. The study instruments were designed based on the specific objectives of the research team and content validated by experts in the relevant fields. The data collection tool included socio-demographic factors, presenting complaints or symptoms and diagnosed gynaecological disorders. Details regarding gynaecological disorders were obtained from clinical records.

A female medical professional administered the questionnaire on clinic days. Informed written consent was obtained from all the participants prior to data collection. Data were analysed using the Statistical Package for the Social Sciences, version 26 software. The proportion of each gynaecological disorder was calculated. The chi-square test determined the factors associated with specific gynaecological disorders. Ethical clearance was obtained from the Ethics Review Committee, Faculty of Medicine, University of Jaffna (J/ERC/23/148/NDR/0297)

Results

The study included 216 participants, with a 100% response rate. The mean age was 71.1±7.6 years. The majority of the sample were between 60 and 70 years old (53.1%), from rural areas

(60.2%) and did not have O/L qualifications (71.8%). Most had been housewives (77.3%) and were economically dependent on their children (75%) (Table 1). In the sample, 6% (n=13) had never given birth. While the mean menopausal age was 47.3 ±5.5 years, the majority (89.4%) had reached menopause naturally, and approximately 5% had early or surgical menopause. A few participants (n=7; 3.2%) were on hormonal replacement therapy

.

Table 1. Socio-demographic characteristics of elderly women (n=216)

	n (%)
Age (years)	
60-70	115 (53.1)
Above 70	101 (47.9)
Residential area	
Rural	130 (60.2)
Urban	86 (39.8)
Marital status	
Living with partner	108 (50.0)
Not living with a partner	108 (50.0)
Educational level	
Below O/L	155 (71.8)
O/L and above	61 (28.2)
Previous occupation	
Was employed	49 (22.7)
Housewife	167 (77.3)
Type of family	
Nuclear	115 (53.2)
Extended	101 (46.8)
Economic support	
Self-earned	13 (6.0)
Spouse	16 (7.4)
Siblings	11 (5.1)
Children	162 (75.0)
Pension scheme	7 (3.2)
Others	14 (6.5)

The most common gynaecological symptoms were lower urinary tract storage symptoms (77.3%), back pain (76.4%), lump at the vulva (74.1%), and urinary incontinence (63.4%) (Table 2).

Table 2 Gynaecological symptoms (n=216)

Variables	n (%)
Lump at vulva	160 (74.1)
Lower urinary tract symptoms	
Dysuria	87 (40.3)
Voiding symptoms	99 (45.8)
Storage symptoms	167 (77.3)
Pain symptoms	
Abdominal distension	59 (27.3)
Lower abdominal pain	92 (42.6)
Back pain	165 (76.4)
Post-menopausal bleeding	34 (15.7)
Vulval Symptoms	
Vulval itching	47 (21.8)
Vaginal discharge	104 (48.1)

Considering long-term co-morbid conditions, hypertension (55.1%), diabetes mellitus (29.6%), heart disease (15.7%), bronchial asthma (13.0%), thyroid disorders (9.7%), chronic kidney diseases (5.1%), anaemia (3.2%), and chronic obstructive pulmonary disease (1.9%) were identified in the sample. The study highlighted a diversity of gynaecological disorders among geriatric women; 7.9% had benign postmenopausal bleeding compared to 6.9% who had malignant postmenopausal bleeding and 13.4% had urogenital infections. The proportions affected by carcinoma in the cervix, endometrium, ovary, and vulva were 3.7%, 3.7%, 4.2%, and 0.5%, respectively. The prevalence of malignant ovarian masses (5.1%) was slightly higher than benign ovarian masses (2.8%). Cystocele and uterovaginal prolapse were observed among 51.9% and 59.7%. Age was significantly associated with having a cystocele (p=0.004) and uterovaginal prolapse (p=0.007). Age, residential area, marital status, educational level, occupation, and type of family were not associated with any gynaecological disorders like malignant ovarian masses, benign masses and uterovaginal prolapse.

Discussion

Most of the participants were rural dwellers, less educated, previously housewives, now widowed and economically dependent on their children. These social circumstances underscore the potential economic vulnerability of elderly women, often amplified by reduced healthcare access, limited awareness and understanding of health issues (7) and available medical services. They are also prone to psychological distress (8) and require social support.

The high prevalence of pelvic organ prolapses is consistent with existing literature that highlights it as a common issue among elderly women due to the weakening of the pelvic floor muscles and tissues during the post-reproductive period (9).

The occurrence of post-menopausal bleeding in participants is also warranting attention because of its potential association with malignancies. A notable incidence of carcinoma found in this study emphasises the critical need for regular screening and early detection measures in this population to manage and mitigate cancer risks effectively. The high prevalence of comorbidities such as hypertension, diabetes mellitus, heart disease, and bronchial asthma complicates treatment (10) of gynaecological disorders, and a comprehensive approach that coordinates both gynaecological and general health needs is required.

Conclusion

Health systems must prioritise developing accessible and culturally sensitive healthcare programs that cater to the unique needs of geriatric women. Rural, economically dependent women may face more financial and social difficulties. Our findings suggest that a substantial proportion of women are affected by symptoms that are usually associated with underlying cancer, such as post-menopausal bleeding, that necessitate urgent and targeted healthcare interventions. This highlights the need for coordinated care between primary and specialised geriatric gynaecological services, especially in triaging geriatric women with gynaecological conditions at the primary care level and referring them as needed to tertiary centres. By addressing the medical, social, and economic needs of elderly women, health systems can support this growing demographic and improve their quality of life.

Acknowledgement

We acknowledge the contribution of all the study participants and the support of the Director and respective consultants at Teaching Hospital Jaffna.

Conflict of interest

The authors have no conflicts of interest to declare.

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CP 09

The patterns of traditional healing practices among first-contact patients with psychiatric services in two mental health facilities in Jaffna

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Abstract

Background and objectives: Mental illnesses remain a global health challenge, mandating prompt identification and intervention. Social stigma and ignorance often deter individuals from seeking timely care. Sufferers explore alternative explanations for the origin of mental illnesses, and most resort to traditional healing rituals that are deeply rooted in our culture and are perceived to provide holistic care.

This study investigated the relationship between different mental illnesses and traditional healing practices utilised by first-contact patients presenting to the psychiatry units of Teaching Hospital Jaffna and Base Hospital Tellippalai.

Methods: This institution-based descriptive cross-sectional study was conducted between October 2021 and April 2022, involving 353 participants. Data were collected through a semi-structured, interviewer-administered questionnaire at inpatients and outpatient settings of the above-mentioned psychiatric facilities. Chi-square test was used to determine the significance.

Results: The mean age of the sample was 33.1 (SD = 13.86) years with slight male preponderance and the majority were Tamil Hindus. Common mental illnesses were depressive disorder (24.4%), followed by mental and behavioral disorders due to substance use (20.7%) and adjustment disorder (12.2%). Over half the sample (57.5%) had sought one or more traditional healing rituals before coming into contact with psychiatric services. Having adjustment disorders was significantly associated with the practice of evicting the evil eye (p=0.021), while depression was associated with chanting religious slogans (p=0.01), and schizophrenia with tying of enchanted threads/talismans/amulets (p=0.044).

Conclusion: Integrating scientifically validated elements of traditional healing into mental health treatment, while ensuring the duration of untreated illness is not extended, is crucial. Additional research is needed to comprehend the intricate relationships between traditional healing practices and mental illness as well as their impact on mental health care. Educating

traditional healers on recognizing major mental illnesses and working with them for timely referrals would be considered the way forward.

Keywords: Traditional healing rituals, Mental illness, First-contact patients to psychiatric services, Jaffna

Introduction

Mental illnesses are common contrary to the public perception [1]. According to the World Health Organization (WHO), mental illnesses account for 30% of the non-fatal disease burden and 10% of the overall disease burden globally, inclusive of death and disability [2]. Social stigma and lack of awareness around mental illnesses make sufferers delay seeking help from mental health professionals [3]. The sufferers and family often attribute mental illnesses to alternative explanations, which they believe are best dealt with culturally by traditional healers who are believed to provide holistic care [4].

In clinical settings, it is frequently observed that patients with mental illness seek help from traditional healers before turning to psychiatric services, resulting in delayed allopathic care. The duration of untreated illness is known to affect disease outcomes [5-7]. This study aimed to investigate the association between mental illnesses and commonly practiced traditional healing rituals in northern Sri Lanka.

Methods

This study was an institution-based descriptive cross-sectional study carried out between October 2021 and April 2022 at inpatient and outpatient settings of mental health facilities at Teaching Hospital Jaffna and Base Hospital Tellippalai. Consenting patients aged 14 years and above, who could coherently describe their experiences and presented to psychiatric services for the first time, were recruited. The sample size was calculated as 452 [8] and data were collected from 440 eligible patients.

Data were collected with a data collection form consisting of three parts. Parts A and B were included in the data extraction sheet where relevant details were obtained from clinical records. Part C was designed as an interviewer-administered semi-structured questionnaire. The questionnaire was originally formulated in English, translated into Tamil and Sinhala, and back-translated. Informed written consent was obtained from all participants, including consent from parents or guardians for those under 18 years. After careful evaluation and cleaning, the data of 353 participants were included in the analysis. Data were analyzed using SPSS-25. The chi-square test was employed to determine the statistical significance of associations (significance level 0.05).

The study received approval from the Board of Study in Psychiatry, Postgraduate Institute of Medicine, University of Colombo, and relevant hospital authorities. Ethical clearance was obtained from the Ethics Review Committee of the Faculty of Medicine, University of Jaffna (J/ERC/21/125/NDR/0247).

Results

Out of 353 participants, 203 (57.5%) were referred to psychiatric services of Teaching Hospital Jaffna from other wards. Further 70 (20.4%) participants were reviewed in the out-patient clinic of Teaching Hospital Jaffna following self-referrals or referrals from the outpatient department, judicial services, etc. The rest were recruited from Base Hospital Tellippali, where 46 (13%) were inpatients and 34 (9.6%) were outpatients. The breakdown of the sample by sociodemographic factors is given in Table 1.

Table 1: Socio-demographic characteristics (n=353)

Characteristics		n	%
Gender	Female	164	46.4
	Male	189	53.6
Marital status	Single	147	41.6
	Married	163	46.2
	Married and separated	31	8.8
	Living together	3	0.8
	Divorced	2	0.6
	Widowed	7	2.0
Number of children	None	191	54.1
	1	42	11.9
	2	63	17.8
	3	30	8.5
	>3	27	7.6
Ethnicity	Tamil	349	98.9
	Muslim	2	0.6
	Sinhala	2	0.6
Religion	Hindu	265	75.1
	Christian	84	23.8
	Buddhist	2	0.6
	Islam	2	0.6
Level of education	No formal education	3	0.8
	Grade 5 or less	14	4.0
	Grade 6 to 11	119	33.7
	Completed Ordinary level	130	36.8
	Completed Advanced level	49	13.9
	Higher studies	38	10.8
Occupation	Unemployed	128	36.3
	Unskilled labourer	44	12.5
	Semi-skilled worker	97	27.5
	Clerical officer	10	2.8
	Professional	18	5.1
	Others	56	15.9

The mean age of the sample was 33.1 (SD=13.86) years. There was a slight male preponderance (male 53.6%, female 46.4%). Most participants were married (46.2%) or single (41.6%). The sample was predominantly Tamil (98.9%) and Hindu (75.1%). Table 1 describes the sociodemographic details of the sample.

More than half the study sample (52.7%) reported to a psychiatric service within one month from the onset of the symptoms, irrespective of their referral pathway, while 15% reported after one year. There was no significant association between delayed presentation (after 1 year of presentation) to psychiatric services and consumption of traditional healing ($p = 0.44$).

In terms of the morbidity profile of participants, nearly a quarter of the sample was diagnosed with depression (24.4%). Substance use disorders were the second most common, affecting 20.7%. Notably, 12.2% and 5.7% had adjustment disorder and schizophrenia, respectively (Table 2).

Table 2: Morbidity profile of participants (n=353)

Diagnosis	n	%
Depressive illness	86	24.4
Mental and behavioral disorders due to substance use	73	20.7
Adjustment disorder	43	12.2
Schizophrenia	20	5.7
Anxiety disorders	18	5.1
Acute and Transient psychosis	17	4.8
Borderline personality disorder	13	3.7
Dissociative disorder	13	3.7
Bipolar affective disorder	11	3.1
Others	23	6.5
Open/not recorded	36	10.2
Total	**353**	**100**

Over half the sample (57.5%) had sought one or more traditional healing rituals before coming into contact with psychiatric services. Among them, tying of enchanted threads/ talisman/amulets (51.72%) emerged as the most utilized ritual. Chanting of religious slogans (33.5%) and evicting evil eye (34%) were commonly utilized practices. Table 3 provides the complete list of traditional healing rituals used by the study participants.

The analysis revealed that adjustment disorders were significantly associated with the practice of evicting the evil eye (p=0.021), while depression was significantly associated with chanting religious slogans (p=0.01). Schizophrenia showed a significant association with the use of enchanted threads, talismans, or amulets (p=0.044). No other significant associations between mental disorders and traditional healing rituals were identified.

Table 3: Types of traditional healing practices (n=203)

Healing method	n*	%
Tying enchanted thread/ talisman/ amulet	105	51.7
Evicting evil eye	69	34.0
Chanting religious slogans	68	33.5
Engaging in Oracle	33	16.2
*Thadai vedduthal/ dheki gedi kapuveema***	29	14.3
Evicting sorcery	21	10.3
Forming protective boundaries	17	8.4
*Kalippu kaliththal****	11	5.4
Evicting evil through laxatives	4	2.0
Exorcism practices	2	1.0
Tried but do not know which specific methods	5	2.5
Other methods	29	14.3

*More than one response was possible.
**Involves cutting lime to evict perceived obstacles.
*** Involves swirling of lime or khomba leaves around the head for exorcism.

Discussion

This study focused on individuals seeking psychiatric services for the first time, who had previously utilized traditional healing methods upon encountering symptoms.

Research in this area is vital as traditional healing practices are deeply ingrained in Sri Lankan culture. To what extent these practices would benefit patients with mental illness has been debated, and has not been fully understood and minimally studied. It has been observed that some individuals with less severe mental disturbances who consume traditional healing practices find potential benefits, and therefore, may not necessarily seek help from allopathic psychiatric services [9]. The impact of traditional healing practices comes into the limelight when such practices delay health-seeking of the mentally ill, especially in the context of major mental illnesses such as schizophrenia or bipolar affective disorder. That the duration of untreated psychosis greatly influences the prognosis of such illnesses has been established in a systematic review by Nortje et.al [10] and in the local context by Somasundaram et.al [9].

When analysing the morbidity profile of the participants, depressive illness emerged as the most prevalent mental health issue, consistent with a study conducted in the mental health unit, Teaching Hospital Jaffna [11]. The same study revealed deliberate self-harm as the second most common presentation through liaison work-up at Teaching Hospital Jaffna. Deliberate self-harm in the context of no associated psychiatric comorbidity was cleaned out from the data as this is not classified as a mental disorder as per ICD-10 criteria. The referrals related to alcohol and substances were noted to be on the high end during the study period perhaps due to the COVID-19 pandemic and economic crisis [12].

Concerning the association of mental illnesses and traditional healing practices; adjustment disorders were found to be significantly associated with evicting evil eye. This association might reflect the cultural beliefs surrounding the attribution of challenges in life circumstances and adjustment difficulties to negative external influences. Further, the practice of evicting evil eye is considered a routine ritual in many parts of northern Sri Lanka. Meanwhile, depression showed a significant association with the chanting of religious slogans. This finding may be indicative of a potential cultural coping mechanism or a way individual with depression seek solace through religious practices. Schizophrenia was significantly associated with tying enchanted threads/talismans/amulets. This could be influenced by deep-rooted cultural beliefs regarding the protection drawn from the ritual from evil spirits and persecutors.

In investigating the link between different mental illnesses and culturally significant traditional healing practices, the authors found a scarcity of prior research on the subject. To address this gap, it will be useful to broaden the search criteria and review grey literature. Further, consultation with experts and practitioners, adjusting the research focus, and collaborating with traditional healers would pave the way to understanding the complex nature of the associations.

Conclusion

The study underscores the complex relationship between psychiatric conditions and traditional healing practices. The findings highlight the need for a contextualised understanding of cultural influences on mental health and the potential integration of culturally-sensitive approaches in mental health interventions.

Recommendations from this study include mitigating stigma through awareness programs and enhancing the quality of mental health services. Collaborating with traditional healers to recognize and refer patients with mental illness would be crucial. Further, promoting early intervention programmes, encouraging family involvement in treatment, and establishing

monitoring and evaluation systems would also be critical. Research on cultural and social factors influencing the preference for traditional healing and developing policies to integrate traditional practices into mental health care could be considered in the future.

Acknowledgment
We wish to thank the heads of the institutions of Teaching Hospital Jaffna and Base Hospital Tellippalai for granting permission to carry out the study, as well as the staff of the mental health units of both hospitals, and the patients who participated.

Conflict of Interest
None of the authors have any conflicts of interests, financial or otherwise, to disclose.

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CP 10

Pattern of dyslipidaemia among healthy adults in Jaffna District, Northern Province, Sri Lanka

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Abstract

Background and objective: Dyslipidaemia is an important modifiable risk factor of cardiovascular disease. Information on the pattern of dyslipidaemia will help to plan interventions to reduce the risk of cardiovascular disease. The objective of this study was to describe the pattern of dyslipidaemia among healthy adults in Jaffna district using secondary data.

Methods: We analysed the lipid profile of 500 healthy adults who underwent basic health screening for non-communicable diseases. Data were extracted from the database of the Regional Directorate of Health Services of Jaffna district. Lipid levels were categorized according to national and international guidelines. Chi-square test was used to determine the associations between dyslipidaemia and age and sex. A p value ≤ 0.05 was considered significant.

Results: Majority of the study sample was women (61.4%) and mean age of the participants was 54.8±12.6 years. Four out of five individuals (78.2%) had at least one type of lipid abnormality. Prevalence of dyslipidemia was highest (84.2%) in the middle age group (40-60 years) and differences in the prevalence by age group were significant (p=0.001). Dylipidaemia was more prevalent among women (83.7%) than men (69.4%) (p<0.001). The most common type of dyslipidaemia (58.4%) was low levels of high-density cholesterol (HDL-C) which was also higher in women (68.4%) compared to men (42.5 %) (p<0.001).

Conclusion: Dyslipidaemia was highly prevalent in Jaffna population and more common among women than men. Like other South Asian populations, low HDL-C was the most common type of dyslipidaemia. Further studies to determine the contributors to dyslipidaemaia would help to plan interventions to improve lipid parameters in the Jaffna population.

Keywords: Dyslipidaemia, cardiovascular risk factos, Jaffna, low HDL-C, South Asians

Introduction

Cardiovascular disease (CVD) is the leading cause of death worldwide and South Asians have a greater risk of developing CVD. Dyslipidaemia is considered an important risk factor associated with CVD in South Asians [1-3]. According to 2019 statistics, ischaemic heart is

the leading cause of death in Sri Lanka [4]. Previous studies have shown a high prevalence of dyslipidaemia among Sri Lankans [5, 6]. These findings suggest that like other South Asians dyslipidaemia could be an important contributor to CVD among Sri Lankans. As ethnic and cultural differences could influence the lipid profile, this paper focuses on the pattern of dyslipidaemia in Jaffna district where almost all the population is Sri Lankan Tamil—one of the major ethnic groups in the country. The aim of this study was to describe the pattern of dyslipidaemia among healthy adults in a predominantly Sri Lankan Tamil population. As dyslipidaemia is a modifiable risk factor of CVD, analyzing the pattern of dyslipidaemia among healthy individuals would provide vital information to plan interventions to reduce CVD.

Methods

We analysed the pattern of the lipid profile of the control group (healthy adults) of a larger study on the lipid profiles of diabetic and non-diabetic patients in Jaffna. The control group was made up of 500 healthy adults who underwent basic screening for non-communicable diseases as part of the programme conducted by the Regional Directorate of Health Services in Jaffna district in 2021 and 2022. This was a cross-sectional analysis of secondary data of 500 healthy adults. Individuals who had no preexisting medical conditions and were not diagnosed with any medical condition during the screening were considered as healthy adults in this study. Adequacy of sample size to show the difference in dyslipidaemia between men and women was determined using the values reported by Katulanda et al. [5, 7]. The lipid profiles of healthy adults were obtained from the Regional Directorate of Health Services of Jaffna district. A data extraction sheet was used to extract information on age, gender, and total cholesterol (TC), low-density cholesterol (LDL-C), triglyceride (TG) and high-density cholesterol (HDL-C) levels from the database. Ethics approval was obtained from the Ethics Review Committee of Teaching Hospital, Jaffna (Ref. No.: S02/08/2021) and administrative approvals were obtained from relevant authorities before commencing data collection.

Based on national and international guidelines [8, 9] normal and abnormal lipid levels were categorized (Table 1). Data were entered in Microsoft Excel (version 16.0) and analysed. Results were summarized as frequencies, percentages, mean, and standard deviation (SD). Chi-square test was performed to determine the association between the presence of dyslipidaemia and age and sex. Age was categorized as <40 years, 40-60 years and >60 years. A p-value equal to or less than 0.05 was considered statistically significant.

Results

Of 500 individuals in the sample, there were 193 (38.6%) men and 307 (61.4%) women. The mean age of the sample was 54.8±12.6 years.

Overall, 78.2% had one or more dyslipidaemia. Prevalence of dyslipidaemia was higher among women (83.7%) than men (69.4%). The difference in the prevalence of dyslipidaemia between men and women was statistically significant ($p<0.001$). Prevalence of dyslipidaemia in the age groups <40 years (n=62), 40-60 years (n=266) and >60 years (n=172) was 75.8%, 84.2% and 69.8%, respectively. Significant difference in prevalence of dyslipidaemia by age group was observed ($p=0.001$). Dyslipidaemia was more prevalent among women in all age groups (Fig. 1). When considering sex, we found a significant difference in the prevalence of dyslipidaemia by age group among men ($p=0.02$) but not women.

Table 1 shows the pattern of dyslipidaemia in the study sample. The proportion of people with suboptimal TC (≥200 mg/dL), LDL-C (≥130 mg/dL), TG (≥150 mg/dL) and HDL-C (men

<40mg/dl and women <50mg/dl) levels were 38.8% (n=194), 35.8% (n=179), 22.8% (n=114) and 58.4% (n=292) of the population respectively. When comparing men and women, suboptimal LDL-C (35.8% vs. 30.6%) and TG (26.4% vs. 20.5%) were more prevalent among men whereas suboptimal TC (36.8% vs. 40.1%) and low HDL-C (42.5 % vs. 68.4%) were more prevalent among women. A statistically significant difference between men and women was observed for low HDL-C (p<0.001).

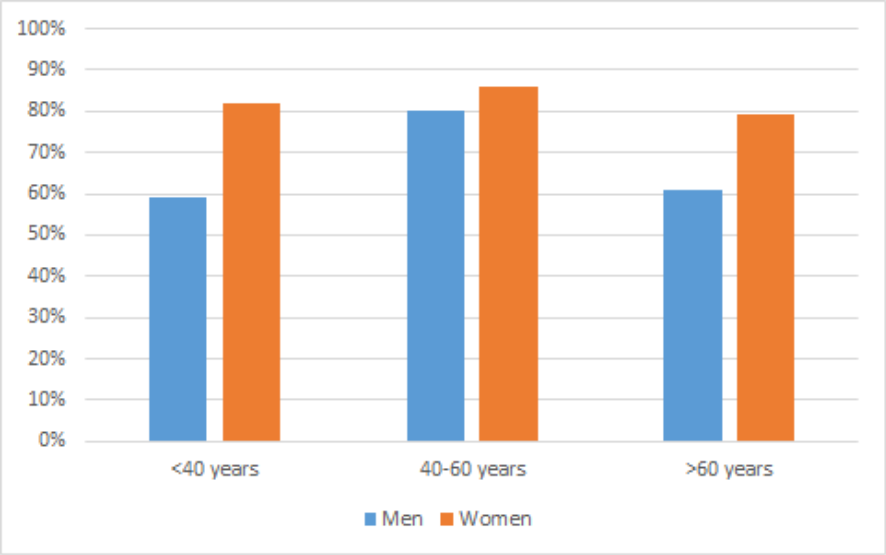

Fig. 1 Prevalence of dyslpidaemia by age group and sex

Table 1 Pattern of dyslipidaemia among healthy adults

Lipid levels	Frequency (percentage) Total population (N=500)	Men (N=193)	Women (N=307)
Total Cholesterol			
Desirable <200 mg/dL	306 (61.2)	122 (63.2)	184 (59.9)
Borderline high 200-239 mg/dL	139 (27.8)	55 (28.5)	84 (27.4)
High ≥240 mg/dL	55 (11.0)	16 (8.3)	39 (12.7)
LDL Cholesterol			
Optimal <100 mg/dL	150 (30.0)	60 (31.1)	127 (41.4)
Near optimal <100-129 mg/dL	171 (34.2)	64 (33.2)	86 (28.0)
Borderline high 130-159 mg/dL	108 (21.6)	49 (25.4)	44 (14.3)
High ≥160 mg/dL	71 (14.2)	20 (10.4)	50 (16.3)
Triglyceride			
Optimal <150 mg/dL	386 (77.2)	142 (73.6)	244 (79.5)
Borderline high 150-199 mg/dL	70 (14.0)	30 (15.5)	40 (13.0)
High ≥200 (2.6)	44 (8.8)	21 (10.9)	23 (7.5)
HDL Cholesterol			
Optimal ≥60 mg/dL	58 (11.6)	24 (12.4)	34 (11.1)
Acceptable men=40-59 mg/dL; women=50-59 mg/ dL	150 (30.0)	87 (45.1)	63 (20.5)
Poor men<40 mg/dL; women <50 mg/dL	292 (58.4)	82 (42.5)	210 (68.4)

Discussion

Prevalence of dyslipidemia in the Jaffna population was high (78.2%). A similar finding was reported by the Sri Lanka Diabetes and Cardiovascular Study (SLDCS) which showed that 77.4% of Sri Lankan adults had one or the other dyslipidemia [5]. High prevalence of dyslipidaemia was also reported among urban South Asians residing in Chennai (82.9%), Delhi (69.3%) and Karachi (73.9%) [10]. Like other Sri Lankan and South Asian populations, dyslipidaemia was more prevalent among women than men in our study as well [5, 10].

Our findings show that the prevalence of dyslipidaemia was higher among the middle age group (40-60 years). Similar age-related differences in prevalence of dyslipideamia was observed in men, while the trend in women was more or less consistent across the age groups.

We found that the prevalence of low HDL-C was higher in women (68.4%) than men (42.5%) in the Jaffna population. A similar observation was reported in the SLDCS study where low HDL-C levels were observed in about one-third of men and two thirds of women [5]. Tennakoon et al. reported a lower prevalence of low HDL-C among Sri Lankans in Oslo (men=27.8%; women=24.7%) than in Sri Lanka and a slightly higher prevalence of low HDL-C in men compared to women in Oslo and in Kandy (58.3% vs 53.3%) [11]. Differences in the environmental and lifestyle could have contributed to the lower prevalence of low HDL-C among Sri Lankan in Oslo. Studies comparing the lipid levels of South Asians and non-South Asians show higher prevalence of low HDL-C among South Asians compared to non-South Asians [12, 13]. It appears that most South Asians including the Jaffna population show a trend towards low HDL-C.

In our study, about one-third of the population (35.8%) had suboptimal LDL-C which was lower than the prevalence reported in Sri Lankans (46.0%) in the SLDCS study [5]. Prevalence of suboptimal LDL-C among urban South Asians (19.1% to 29.1%) was lower than our findings [10]. It has been reported that quality rather than quantity of LDL-C contributes to an increased risk of CAD in South Asians. Ruuth et al. showed that LDL aggregation susceptibility was higher in South Asians compared to Caucasians [14]. These observations show the inconsistency in LDL-C level among South Asian populations and highlight the need for determining the quality of LDL-C in different ethnic groups.

Another characteristic of South Asians is elevated TG. However, our study population had a relatively lower prevalence of high TG level. A suboptimal TG level (≥150 mg/dL) was observed in less than one-fourth of the study population (22.8%) which us similar to the findings (23%) of the SLDCS study [5]. Tennakoon et al. reported a higher proportion of Sri Lankans with high TG levels (≥240 mg/dL for men ≥200 mg/dL for women) in Oslo (men=33.1% and women=25.7%) and Kandy (men=39.7% and women=35.8%) [11]. Compared to the present study, a greater proportion of urban South Asians (30.4% to 34.6%) had suboptimal TG levels [10]. Proportion of South Asians (men=43.6%; women=50.4%) with high TG levels reported in the Manchester study was higher than the present study [12]. These findings indicate the lower prevalence of suboptimal TG level in the Jaffna population compared to other South Asian populations.

There are limitations in this study. As we analysed available data from a screening programme, it may not be a representative sample of the population. However, information derived from this analysis provides an understanding about the pattern of the dyslipidaemia in the local population which may help to plan future studies and interventions. Since we analysed

secondary data, information on patient characteristics was minimal. Therefore, we were not able determine the contributing factors for dyslipidaemia.

Conclusion

Prevalence of dyslipidaemia in Jaffna population was high and it was more prevalent among women than men. Like other Sri Lankan and South Asian populations, the most common dyslipidaemia was low HDL-C which also showed a female preponderancy. However, prevalence of high TG was lower in the Jaffna population than in other South Asian populations. Further studies focusing on the factors contributing to dyslipidaemia are needed to plan interventions to improve the lipid profile and lower CVD risk.

Acknowledgement

This work was supported by the Faculty Research Grant of the Faculty of Medicine, University of Jaffna. Authors acknowledge Keerthana Chandravathanan for assistance in data entry.

Conflict of interest

None of the authors have any conflict of interest.

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CP 11

Intelligence quotient, working memory, and reaction time of secondary school students in Jaffna district and the influence of sociodemographic factors

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Abstract

Background and objectives: Intelligence quotient (IQ), working memory (WM), and reaction time (RT) are important cognitive abilities that influence career achievements. The objective of the study was to assess intelligence, working memory, and reaction time of secondary school students in Jaffna district and to determine their association with sociodemographic factors.

Methods: This analytical cross-sectional study was conducted among 765 students across five educational zones in Jaffna. The IQ and WM were assessed by Raven's Standard Progressive Matrices (RSPM) and Digit Span Backward Test (DSBT), respectively. The RTs were assessed by computer software developed locally. Independent sample t-test and one-way ANOVA were used for statistical analysis (significance level 0.05).

Results: The mean simple and choice RTs among students were 690.6±114.5s and 775.8±119.5s, respectively. The mean IQ assessed by RSPM was 47.9±7.4 and the mean DSBT score was 5.6±1.9. There were significant differences in RTs between males and females in simple (663.8s versus 718.5s, $p<0.001$) and choice (753.0s versus 799.6s, $p<0.001$) RTs with males having lower RTs than females. However, there were no significant differences in IQ and WM between males and females. Significant differences in all cognitive parameters were observed by educational zone, school, and parents' educational qualifications ($p\leq0.05$). Both IQ and WM displayed an increasing trend with increasing parental education. A strong positive correlation was observed between WM and IQ ($r=0.37$, $p<0.001$). Both simple and choice RTs had a weak negative correlation with IQ (simple $r=-0.19$, $p<0.001$; choice $r=-0.22$, $p<0.001$) .

Conclusions: Our findings are consistent with studies in other countries. Further research incorporating functional neuroimaging is required to establish the neurobiological basis of sex differences in cognitive abilities and the neurobiological relationship between IQ, WM, and RTs.

Keywords: Reaction times, Intelligent quotient, Working memory, Secondary school students

Introduction

Intelligence, working memory, and reaction time are key features of cognitive ability and are known to have a significant influence on academic success and career path (1).

Intelligence by definition is the ability to utilize information, understand experiences, engage in logical thinking and arrive at conclusions in order to resolve tribulations and acclimatize to new situations (2). Working memory (WM) refers to the system or systems that are assumed to be necessary to keep things in mind while performing complex tasks such as reasoning, comprehension, and learning (3). Reaction time (RT) is the time that elapses between the presentation of a particular sensory stimulus (visual, auditory, tactile, etc.) to an individual and their behavioral response to that stimulus (4). These three cognitive skills provide insight into the ability of a person to acquire, store, process and utilize information for decision-making. Though these processes are interconnected, the intricacies of their relationships with one another remain a mystery.

Research has shown that these cognitive domains are influenced by both genetic and environmental factors. The extent of the influence of sociodemographic factors on cognitive abilities is an area of constant debate. Research in this area is limited in the South Asian region, especially in Sri Lanka. Our study aimed to assess the cognitive abilities of secondary school students in Jaffna district and the influence of sociodemographic factors on cognitive abilities.

Methods

This was an analytical cross-sectional study conducted among 765 students from 10 schools (2 schools each in 5 educational zones) in Jaffna district. Students studying in Grade 10 in the schools with the highest enrollment in each zone were recruited using cluster sampling with consideration to the gender ratio. We intended to recruit an equal number of students from each educational zone, but the unavailability of schools with large student populations in the Theevagam zone led to clusters with unequal populations.

Raven's standard progressive matrices version 1 (RSPM V1.0) was used to assess the intelligence quotient (IQ). It consists of five sets (A to E) of puzzles with puzzles within a set becoming increasingly difficult. An hour was given for the participants to complete the test. The score was calculated according to the number of correct responses from a range of 0-60.

WM was measured by the digit span backward test (DSBT). The test starts when the examiner reads aloud a sequence of digits starting with a three-digit span. The participants are then required to write the read span in backward order. The length of the sequence is then increased by one digit up to an eight-digit span. Two such sets were read out loud and the scores were calculated based on the highest span of digits correctly recalled in at least one of the two sets. Scores were assigned from a range of 0-8

RT was measured using reaction timer software developed locally and installed on a computer. Simple visual RT and choice visual RT were measured by selecting the best of three attempts each. Although RSPM V1.0 and DSBT have not been validated in Sri Lanka, they have been validated in India and used extensively in studies conducted in Sri Lanka (5,6). The RT software has also been used previously by the Department of Physiology, University of Jaffna.

Data were analyzed using SPSS 23. Independent sample t-tests were used to test differences in IQ, WM, and RT between males and females and one-way ANOVA was used to explore the significance of differences among other sociodemographic categories. Pearson's correlation coefficient was used to describe the correlation between different cognitive abilities. A correlation coefficient of 0.00 to 0.19, 0.20 to 0.39, 0.40 to 0.59, 0.60 - 0.79, and 0.80 to 1.00

were considered to signify very weak , weak, medium, strong and very strong correlations, respectively.

Ethical clearance was obtained from the Ethics Review Committee, Faculty of Medicine, Jaffna.

Results

Table 1 summarizes the sociodemographic characteristics of the participants. A total of 765 students from 10 schools across five educational zones in Jaffna participated in the study. Of them 391 (51.1%) were males and the remaining 374 (48.9%) were females. Jaffna zone contributed the highest proportion of participants (25.1%), while the Theevagam zone contributed the lowest (13.2%). In the sample, 16.6% and 17% of students, respectively, reported their fathers and mothers were degree holders, while 1% of fathers and 0.7% of mothers had no formal education.

Table 1. Sociodemographic characteristics (n=765)

Characteristic		n	%
Sex	Male	391	51.5
	Female	374	48.9
Zone	Jaffna Zone	192	25.1
	Vadamaradchchy Zone	167	21.8
	Thenmaradchchy Zone	151	19.7
	Valigamam Zone	154	20.1
	Theevagam Zone	101	13.2
School	Vembadi Girls' High School	98	12.8
	Nelliady Central College	96	12.5
	Jaffna Hindu College	95	12.4
	Chavakacheri Hindu College	84	11.0
	Mahajana College, Tellipalai	80	10.5
	Union College, Tellipalai	74	9.7
	Methodist Girls High School	70	9.2
	Meesalai Veerasingam Central College	67	8.8
	Velanai Central College	54	7.1
	Karainagar Hindu College	47	6.1
Father's educational level	No formal Education	8	1.0
	Primary Education	43	5.6
	Secondary Education	373	48.8
	G.C.E A/L	189	24.7
	Diploma	25	3.3
	Degree and Postgraduate	127	16.6
Mother's educational level	No Formal Education	5	0.7
	Primary Education	28	3.7
	Secondary Education	316	41.3
	G.C.E A/L	233	30.5
	Diploma	53	6.9
	Degree and Postgraduate	130	17.0
Total		765	100.0

Table 2 presents the mean scores of the sample obtained for the three facets of cognitive abilities assessed. The choice RTs were higher than simple RTs obtained.

Table 2. Cognitive abilities of the participants (n=765)

Cognitive ability		Mean	Standard deviation	Median	IQR
Reaction time	Simple visual reaction time(s)	690.6	114.5	674.0	153.0
	Choice visual reaction time(s)	775.8	119.5	768.0	149.5
Intelligence quotient	RSPM V1.0[a]	47.9	7.4	49.0	8.0
Working memory	Digit span backward test	5.6	1.9	6.0	3.0

[a] Raven's Standard Progressive Matrices Version 1.0

Table 3 depicts the differences between the males and females in the cognitive abilities. The mean simple RT of males was lower than that of females ($p<0.001$). Males also had a better mean choice reaction time compared to females ($p<0.001$). The mean IQ score for females (48.4±6.2) was slightly higher than that of males (47.4±8.4), although the difference was not statistically significant ($p=0.06$). Similarly, the difference in WM assessed by DSBT was also statistically not significant ($p=0.33$), although females again had a higher mean score. The variability of IQ and WM scores was higher in males compared to females (Table 3).

Table 3. Sex differences in cognitive abilities (n=765)

	Sex	**Mean**		**t-test**	
		Mean	Standard deviation	t value, df	p value
Simple visual reaction time (s)	Male	663.8	108.1	6.79	<0.001
	Female	718.5	114.4		
Choice visual reaction time (s)	Male	753.0	114.7	-5.49	<0.001
	Female	799.6	120.0		
Intelligence quotient	Male	47.4	8.4	-1.96	0.060
	Female	48.4	6.2		
Working memory	Male	5.5	2.0	-.97	0.330
	Female	5.6	1.8		

Table 4 summarizes the differences among different zones in cognitive abilities. The results showed that there were significant differences in cognitive abilities among education zones.

Table 4. Cognitive abilities in different zones (n=765)

	Educational Zone	Mean	Standard deviation	F	p value
Simple visual reaction time	Jaffna Zone	655.4	112.8		
	Vadamaradchchy Zone	705.7	119.4		
	Thenmaradchchy Zone	701.0	121.5	7.40	<0.001
	Valigamam Zone	689.0	98.4		
	Theevagam Zone	719.2	107.3		
Choice visual reaction time	Jaffna Zone	744.5	124.2		
	Vadamaradchchy Zone	784.0	110.7		
	Thenmaradchchy Zone	793.2	129.5	7.77	<0.001
	Valigamam Zone	763.0	103.3		
	Theevagam Zone	815.4	116.4		
Intelligence quotient	Jaffna Zone	52.7	3.6		
	Vadamaradchchy Zone	48.1	6.2		
	Thenmaradchchy Zone	45.5	8.9	40.47	<0.001
	Valigamam Zone	47.1	6.9		
	Theevagam Zone	43.5	8.2		
Working memory	Jaffna Zone	6.5	1.4		
	Vadamaradchchy Zone	5.5	1.9		
	Thenmaradchchy Zone	5.7	2.0	23.66	<0.001
	Valigamam Zone	4.9	1.9		
	Theevagam Zone	4.71	1.9		

Table 5. Cognitive abilities and father's education level (n=765)

	Father's education level	Mean	Standard deviation	F	p value
Simple visual reaction time	No formal education	652.6	97.4		
	Primary education	723.8	109.6		
	Secondary education	701.2	110.2	3.05	0.010
	G.C.E A/L	681.9	114.4		
	Diploma	657.4	127.2		
	Degree/ postgraduate	669.9	122.3		
Choice visual reaction time	No formal education	743.6	105.5		
	Primary education	807.4	109.1		
	Secondary education	783.6	113.5	2.50	0.030
	G.C.E A/L	775.5	1274		
	Diploma	745.8	137.7		
	Degree/ postgraduate	750.7	121.6		
Intelligence quotient	No formal education	48.0	5.5		
	Primary education	43.6	9.0		
	Secondary education	46.5	7.7	13.52	<0.001
	G.C.E A/L	48.9	7.2		
	Diploma	51.0	4.6		
	Degree/ postgraduate	51.3	4.6		
Working memory	No formal education	5.9	1.8		
	Primary education	4.7	1.7		
	Secondary education	5.3	2.0	11.46	<0.001
	G.C.E A/L	5.7	2.0		
	Diploma	6.2	1.5		
	Degree/ postgraduate	6.5	1.3		

There were significant differences in cognitive abilities among schools as well.

The differences in cognitive abilities between groups categorized according to the father's and mother's educational levels are summarized in Tables 5 and 6. The results reveal statistically significant differences based on both the father's and mother's educational qualifications in all four cognitive domains assessed. The mean scores for IQ and WM show an increasing trend with increasing educational qualifications of the parents apart from the group with no formal education, which departs from the trend. However, it must be noted that the sample size of the subgroup with no formal education was too small to draw any conclusions.

Table 6 - Cognitive abilities and mother's education level (n=765)

	Mother's education level	**Mean**	**Standard deviation**	**F**	**p value**
Simple visual reaction time	No formal education	715.2	45.1		
	Primary education	715.4	97.7		
	Secondary education	708.9	112.8	3.98	0.001
	G.C.E A/L	679.8	109.5		
	Diploma	679.6	111.4		
	Degree/ postgraduate	663.4	126.5		
Choice visual reaction time	No formal education	814.0	56.6		
	Primary education	778.7	139.9		
	Secondary education	788.2	112.6	2.53	0.028
	G.C.E A/L	778.0	113.5		
	Diploma	756.2	138.4		
	Degree/ postgraduate	747.9	131.0		
Intelligence quotient	No formal education	45.0	3.3		
	Primary education	43.5	11.2		
	Secondary education	46.2	7.6	13.56	<0.001
	G.C.E A/L	48.2	7.5		
	Diploma	51.2	4.8		
	Degree/ postgraduate	51.2	4.4		
Working memory	No formal education	4.4	2.7		
	Primary education	4.4	2.5		
	Secondary education	5.3	1.9	10.55	<0.001
	G.C.E A/L	5.6	1.9		
	Diploma	6.0	1.6		
	Degree/ postgraduate	6.4	1.5		

Table 7 shows the correlation coefficients relevant to each variable. There was a very high positive correlation between simple and choice RTs (r=0.6). Simple visual reaction time had a very low negative correlation with IQ (r=-0.19) and WM (r=-0.16). IQ had a low positive correlation with WM (r=0.37). The corresponding p values for all the correlations was 0.01.

Table 7 – The correlation between cognitive abilities (n=765)

	Simple visual reaction time	Choice visual reaction time	Intelligence quotient	Working memory
Simple visual reaction time(s)	*	0.60	-0.19	-0.16
Choice visual reaction time(s)	0.60	*	-0.22	-0.13
Intelligence quotient	-0.19	-0.22	*	0.37
Working memory	-0.16	-0.13	0.37	*

Discussion

We found that simple visual RT was significantly lower than the choice visual RT among the school students. Males had faster simple and choice visual RTs compared to females, which is consistent with other studies (7). The choice RTs were higher than simple RTs, obviously due to the increased complexity of the tasks.

Our results did not show any significant differences in IQ and WM between the genders. Several other studies have also demonstrated similar findings. Wendy showed that although there were no significant differences in the mean IQ score, the IQ score of males showed greater variability (8), a finding demonstrated in our study too. Buczyłowska *et al* reported that there were differences between males and females in different domains of intelligence, although general intelligence was similar (9). A study that used neuroimaging and functional connectivity analysis of the brain attributes these sex differences to differences in neurobiological correlates underpinned by differences in brain network patterns (10)

A systemic review found no sex differences in serial recall and span tasks despite evidence of differences in various aspects of WM (11). Another key finding of this review was that women had similar scores to men in the absence of distraction although their performance declined significantly when distractions were present (12). Our study was conducted in a distraction-free environment, and the findings are consistent with prior findings reported.

Although studies exploring the influence of sociodemographic factors on RT and WM are limited, several studies have explored their relationship with IQ. Studies have demonstrated that parental education correlates significantly with IQ (13,14). Given the correlation between WM and intelligence, it is possible that parental education can have a significant correlation with WM.

The observation of higher cognitive scores in students with parents of higher educational backgrounds raises the question of whether this trend is explained by genetic or environmental influences. The genetic influence hypothesis stems from the possibility that parents with better educational qualifications might have better cognitive abilities and in turn have children with superior cognitive abilities given the strong association between genetics and cognitive abilities. On the other hand, the quality of living of children of educated parents might be higher than that of those with parents from poor educational backgrounds and the environmental factors associated with quality of living such as nutrition, psychosocial support, etc. could be the explanation for the differences. Further research is required to establish the reasons for this interesting observation.

We found an association between schools and educational zones, and cognitive abilities. Differences in cognitive abilities between schools and zones have not been explored previously. However, studies have found that place of residence can influence IQ (15).

Differences in cognitive abilities among students from different zones and schools may in fact be due to differences in place of residence, which, in turn, may be influenced by other social factors.

Our findings of the positive correlation between WM and IQ and the negative correlation between RT and IQ are consistent with earlier findings (16,17). An explanation for these findings may be that although IQ, WM and RT are distinct domains, there could be much overlap in the basic cognitive processes underlying them. This raises a possibility that improvements in one cognitive ability might have positive changes in other cognitive abilities as well. However, further studies using brain imaging and connectivity are required to establish this.

Conclusion

The findings of our study are consistent with studies conducted in other settings. Though we have established associations and correlations between cognitive domains and some sociodemographic factors, neuroscientific studies incorporating functional neuroimaging are required to establish the neurobiological mechanisms that underlie these findings.

Acknowledgments

The authors acknowledge the contribution of Mr. V. Sasikumar for developing the reaction timer software and the staff at the Department of Physiology for their help with logistics.

Conflict of interests

There are no conflicts of interest.

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CP 12

Antenatal care service utilization in public and private sectors among women delivering at a public tertiary care centre in Northern Sri Lanka

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Background and objective: Maternity care is provided free-of-charge through Sri Lanka's public healthcare system. However, pregnant women who rely on the public system also access private antenatal care (ANC) on a fee-levying basis. This study describes ANC service utilization in public and private sectors among pregnant women awaiting delivery at a public tertiary hospital in Jaffna.

Methods: This descriptive cross-sectional study was conducted at Teaching Hospital Jaffna (THJ). Pregnant women ≥18 years awaiting delivery after 33 weeks of gestation were recruited over a 12-week period (20/06/2022 to 09/09/2022). An interviewer-administered questionnaire was administered at the bedside and medical records reviewed to elicit sociodemographic data and details of ANC use. Data were analysed with SPSS (v21). Standard descriptive statistics and chi-square test were used in the analysis (significance level 0.05).

Results: In total, 251 pregnant women participated (response rate 97.6%). The majority (80.5%, n=202) combined public ANC with private services. All participants accessed public ANC at medical officer of health clinics and 96.8% were visited at home by a public health midwife. The majority had visited public hospital clinics (76.9%) and used public laboratory services (64.9%); 35.5% had used inpatient ANC. The use of private sector services was comparatively lower; most accessed private pharmacies (60.6%), followed by channeling centres (48.2%) and laboratories (45%); only two participants reporting using private inpatient care. Median number of contacts with skilled ANC providers was 20 [IQR 17-23; public 17 (IQR 14-21); private 1 (IQR 0-5)]. Women with O/L qualifications (or higher) and those employed were 1.4 and 1.2 times more likely, respectively, to use private ANC. Both these associations were significant at the 0.05 level.

Conclusions: A large proportion of pregnant women delivering at THJ use private ANC. Contacts with ANC providers in the public sector exceeded Ministry of Health and WHO guidance even in the post-COVID setting. Socioeconomic status appears to be associated with private ANC use.

Keywords: Antenatal care, Access to healthcare, Private healthcare, Maternal health, Jaffna

Introduction

Antenatal care (ANC) contributes significantly to reducing preventable maternal and perinatal mortality [1]. The World Health Organization (WHO) recommends eight contacts with skilled providers during pregnancy [1]. However, wide disparities exist in ANC use, influenced by the accessibility and quality of ANC and various sociodemographic factors [2,3].

Sri Lanka's public healthcare system offers comprehensive ANC, comprising clinical assessment, screening, monitoring maternal and foetal wellbeing, optimizing nutritional status and health promotion [4]. Public ANC services are delivered via medical officers of health (MOH), municipal authorities and at hospitals. The Ministry of Health recommends a pregnant woman at 'low risk' be seen at least three times at home and nine times at ANC clinics [5].

The public system delivers the greater share of ANC services with no charges at points of delivery. However, pregnant women who rely on the public system also access private ANC services, including consultations, diagnostics, and pharmaceuticals, on a fee-levying basis. While the Ministry of Health does not routinely report statistics on private ANC, studies from the Western and North Central Provinces of Sri Lanka indicate that the majority of women access some form of private ANC [6,7,8].

The private sector in the North has seen rapid expansion since the end of the civil war. Anecdotal evidence suggests that many pregnant women in Jaffna also access private ANC. Increasing utilization of fee-levying private healthcare has implications for equity of access [9,10]. This study describes ANC service utilization in public and private sectors and associated factors among pregnant women delivering at a public tertiary care centre in Jaffna.

Methods

This descriptive cross-sectional study was carried out at Teaching Hospital Jaffna (THJ)—the only tertiary care centre in Jaffna district. Pregnant women ≥18 years of age, residing in Jaffna district, awaiting delivery after completing 33 weeks of gestation, having primarily accessed specialist ANC in the public sector, were recruited. Women with medical conditions diagnosed prior to the current pregnancy, women in labour, and those who were critically ill, were excluded.

Data were collected over a 12-week period (20/06/2022 to 09/09/2022) using an interviewer-administered questionnaire to elicit sociodemographic data and details of ANC use. All four obstetric units were visited daily. Within each unit, all antenatal bed head tickets (BHT) were reviewed and a list of women awaiting delivery was compiled. All women who fit the study criteria were invited to participate and interviewed at the bedside. Data were extracted from medical records, including the pregnancy record (H-512), BHT, hospital clinic record, investigation reports, and private sector medical records (if any). Data were analysed with SPSS (v21). Standard descriptive statistics were used to describe ANC use. Associations between private ANC use and selected sociodemographic factors were tested using chi-square tests. The Ethics Review Committee, Faculty of Medicine, University of Jaffna, granted approval for the study (J/ERC/21/127/NDR/0258).

Results

In total, 251 pregnant women participated (response rate 97.6%). Mean age was 29 (SD 5.4) years. See Table 1 for a breakdown of the sample by age, ethnicity, education level, household income, employment status and period of gestation.

Table 1. Sample characteristics (n=251)

	n	%
Age (years)		
<35	211	84.1
≥35	40	15.9
Ethnicity		
Tamil	250	99.6
Muslim	1	0.4
Highest educational qualification		
≤Grade 5	1	0.4
Grade 6-11	35	13.9
O/L qualified	92	36.7
A/L qualified ± diploma	99	39.4
Degree holders	24	9.6
Monthly household income (Rs.)		
≤50,000	209	83.2
>50,000	42	16.8
Employment status		
Employed	52	29.7
Unemployed homemakers	199	79.3
Period of gestation (weeks)		
<37	49	19.5
≥37	202	80.5
Total	251	100.0

In the sample, 183 (72.9%) had at least one antenatal risk factor documented in the H-512. The most prevalent risk factor was anaemia (25.5%) followed by high body mass index (BMI,17.1%), advanced maternal age (15.9%), past caesarean section (15.5%) and gestational diabetes mellitus (GDM, 12.7%) (Table 2).

Table 2. Antenatal risk factors identified in the sample (n=251)

Antenatal risk factors	n	%
Anaemia	64	25.5
High BMI (>24.5 kgm^{-2})	43	17.1
Advanced maternal age (35 years)	40	15.9
Past caesarean section	39	15.5
Gestational diabetes mellitus	32	12.7
Low BMI (<18.5kgm^{-2})	23	9.2
PIH/preeclampsia	18	7.2
Bad obstetric history	16	6.4
Rh negative	13	5.2
Small for gestational age/IUGR	13	5.2
Subfertility	11	4.4
Breech	4	1.6
Twin pregnancy	3	1.2
Placenta previa	2	0.8
Teenage pregnancy	1	0.4
Other	8	3.2

*IUGR – Intrauterine growth retardation

Of 251 participants, 202 (80.5%) had accessed private ANC services (family doctor/general practitioner (GP), channeling centre, laboratory, pharmacy or inpatient care) at least once during the current pregnancy. In the public sector, all participants had visited an MOH clinic and 96.8% had received domiciliary care, while 76.9% had visited a specialist clinic, and 35.5% had a prior admission to a public hospital during the current pregnancy. Notably, only 41.8% had attended a health education session delivered by the MOH team. Private ANC use was lower with most accessing private pharmacies (60.6%), consulting specialists (48.2%) and using private laboratories (45%); 12.4% visited a family doctor/GP and only 2 participants had a private hospital admission (both for cervical cerclage) during the current pregnancy (Table 3).

Table 3. Type of ANC provider by sector (n=251)

	n	%
Public sector - field		
MOH clinic	251	100
Home visits by PHM	243	96.8
Health education sessions	105	41.8
Public sector - hospital		
Clinic	193	76.9
Laboratories	163	64.9
Inpatient care	89	35.5
OPD	3	1.2
Private sector		
Pharmacies	152	60.6
Specialists	121	48.2
Laboratories	113	45.0
FD/GP	31	12.4
Inpatient care	2	0.8

*MOH – Medical officer of health; PHM – Public health midwife; OPD – Outpatient department; FD/GP – Family doctor/general practitioner

Participants recorded a median of 20 (IQR 17-23) contacts with skilled ANC providers, including public health midwives (PHM), public health nurses, medical officers of health, family doctors/GPs, other medical officers and specialists. Median number of antenatal visits

in the public sector was 17 (IQR=14-21) and in the private sector 1 (IQR 0-5). The most frequently accessed ANC provider in the public sector was MOH clinics (median 7, IQR 6-8). The median number of visits to channeling centres and family doctors/general practitioners was 0 (Table 4).

Table 4. Contacts with outpatient ANC providers by facility and sector (n=251)

	Mean	SD	Median	IQR	Range
Public sector	17.3	4.4	17	14-21	6-32
MOH clinic	7.2	1.7	7	6-8	1-11
Hospital clinic	4.3	2.9	5	2-6	0-12
PHM (at home)	5.2	2.5	6	4-7	0-14
Health education sessions	0.6	0.9	0	0-1	0-3
Private sector	2.9	3.9	1	0-5	0-21
Channelling centre	2.6	3.6	0	0-5	0-16
FD/GP clinic	0.3	1.5	0	0	0-15
Total	20.3	4.4	20	17-23	8-42

*MOH – Medical officer of health; PHM – Public health midwife; FD/GP – Family doctor/General practitioner

We analysed the number of visits within the subgroups who used specific services. Median number of visits to MOH clinics, hospital clinics, and home visits, were more or less the same given the high proportions using these services. However, the median number of visits was 6 (IQR 2-8) among those who visited channeling centres.

We assessed the association between selected sociodemographic factors and private ANC use. Women with O/L qualifications (or higher) and the employed were 1.4 and 1.2 times more likely, respectively, to use private ANC. Both these associations were significant at the 0.05 level (Table 5).

Table 5. Use of private ANC services by sociodemographic factors (n=251)

	Private ANC		Prevalence ratio	95% CI	X^2, df	p-value
	Yes n (%)	No n (%)				
Education level						
≥O/L	181 (84.2)	34 (15.8)	1.4	1.1-1.9	13.118, 1	<0.001*
<O/L	21 (58.3)	15 (41.7)	1			
Employment status						
Employed	47 (90.4)	5 (9.6)	1.2	1.0-1.3	4.097,1	0.043*
Unemployed	155 (77.9)	44 (22.1)	1			
Monthly household income (Rs.)						
>50,000	38 (90.5)	4 (9.5)	1.2	1.0-1.3	3.209,1	0.073
≤50,000	164 (78.5)	45 (21.5)	1			

*Significant at 0.05 level.

Discussion

The study findings indicate that a large proportion (80.5%) of women delivering at THJ use private ANC. However, it is lower than the proportions reported by two hospital-based studies conducted in Kalutara (96%) and Colombo (95%)[6,7]. The latter studies found a very high proportion accessed private laboratory services (90% and over) as compared to 45% in the present study. Further analysis of our data showed that many women had their screening tests

done at public facilities, including secondary care institutions in Jaffna district, which may explain the difference.

Use of MOH clinics was high at 100% and 97% had visits from a PHM—not surprising as the sample was recruited from the public sector. Among private services, the use of pharmacies (60.6%) was highest, followed by specialists (48.2%) and private laboratories (45%). It is noteworthy that the proportion accessing private sector ANC consultations was less than half the proportion accessing ANC clinics delivered by the MOH and public hospitals. While a study conducted at a tertiary hospital in Mangalore, India, reported a higher proportion of women accessing private ANC (69.5%) [2], the researchers did not differentiate between general and specialist care, making comparisons difficult. Less than 1% of women in the present study used private inpatient maternity care, consistent with national data [12].

The median number of contacts with ANC providers was 20 (IQR 17-23), much higher than reported in other LMICs [13-15] and more than double the WHO recommendation of eight visits [1]. As compared to the Ministry of Health guideline [5] of nine clinic and three home visits for 'low risk' pregnancies, in the present study, the median number of clinic visits and home visits was 12 (IQR 9-14) and 6 (IQR 4-7), respectively. These findings need to be interpreted with caution as our sample was not limited to 'low risk' pregnancies. In the sample, 12.7% and 7.2% had GDM and pre-eclampsia, respectively, both of which require close monitoring. However, as shown in Table 2, the sample does not appear to be overrepresented by complicated pregnancies; 25.5% and 17.1% had anaemia and high BMI, respectively, compared with 29.4% and 32.2% recorded in Jaffna district in 2021 [4]. A second notable finding is that the number of contacts in the private sector (median 1, IQR 0-5) was much lower than in the public sector (median 17, IQR 14-21), suggesting that ANC contacts continue to take place primarily in the public sector.

Almost half our sample used private specialist services (48.2%), similar to a study conducted at De Soysa Hospital for Women in Colombo (49.1%) [7]. Among those who used private ANC, median number of visits was 6 (IQR 2-8) compared to 3 (IQR 1-5) in the De Soysa Hospital study. Despite being located in the city of Colombo, the De Soysa Hospital, like THJ, serves a wide social spectrum, including low-income communities residing in the vicinity of the hospital. The reasons for the higher number of specialist consultations in Jaffna needs further investigation. Women with a higher education level and employment were more likely to use private ANC, consistent with other studies that show that socioeconomic status is associated with private ANC use [9,15].

This study has some limitations. We were unable to achieve the required sample size (n=400) during the data collection period as the number of deliveries was much lower than anticipated in the post-COVID setting. While the results of a hospital-based study cannot be generalized, a nine-month recall period, although widely used in studies on ANC [16,17], can introduce bias.

Conclusion

A substantial proportion of pregnant women who rely on the public sector also use private ANC in Jaffna. As private ANC use involves out-of-pocket expenses, mixing public with private services could widen inequities in access, as suggested by its association with socioeconomic status. The number of contacts with ANC providers was over double the WHO and Ministry of Health recommendations in the post-COVID setting. Further research is needed to better understand these findings in view of streamlining service delivery and minimizing duplication.

Acknowledgements

We thank the nurses at the obstetric units of THJ for their support with data collection. We are grateful to the participants who generously gave their time to participate in the study.

Conflicts of interest

The authors have no conflicts of interest to declare.

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CP 13

Effectiveness of a future substance use risk reduction intervention among secondary school students in the Jaffna district; A quasi-experimental study

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Abstract

Background and objective: Substance use among school-going adolescents is a major public health issue that has grave health impacts and wide-ranging socio-cultural and economic implications. Appropriate preventive measures are imperative to prevent substance use. This study assessed the effectiveness of a school-based life skills intervention to reduce future risk of substance use among secondary school students in the Jaffna District

Methods: A quasi-experimental study was conducted to assess the effectiveness of a life skills-based intervention among Grade 7 and 8 students from four selected national schools, who were assigned to the intervention (n=123) and control (n=131) arms. A constructively/factorially validated Substance Use Risk Profile Scale (SURPS) was used parallelly among control and intervention groups to assess baseline and post-intervention

differences, after adjusting the covariate pre-score. Ranked ANCOVA was used to assess the effectiveness of the intervention (significance level 0.05).

Results: The preventive intervention was effective in reducing impulsivity (F ratio=320.48; p=0.036) and sensation seeking (F ratio=171.44; p=0. 049) behaviour. We were unable to demonstrate its effectiveness in the domains of hopelessness (F ratio=35.24; p=0.106) and anxiety sensitivity (F ratio=31.86; p=0.112) behaviour. However, the interaction between sex and the intervention was found to be statistically significant in the anxiety sensitivity behaviour domain (F ratio=0.028; p=0.028).

Conclusion: Life skills-based training was effective in reducing future risk of substance in the impulsivity and sensation seeking domains. The interaction effect between anxiety sensitivity behaviour and sex suggests that the intervention plays out differently among males and females, and needs further exploration. It is recommended that the relevant stakeholders assess the appropriateness of the intervention for inclusion in school curricula in Sri Lanka.

Key words: Future substance use risk, Risk reduction intervention, Secondary school students, Jaffna district.

Introduction

Until the 1980s, psychoactive substance use was not a major issue in Sri Lanka, but with both the ethnic conflict and rapid social and economic policy changes, drug trafficking and the consumption of psychoactive substances has increased in Sri Lanka (1). Parallelly, the use of psychoactive substances among youth (15 to 24 years) has risen with approximately 15% reporting ever use (2) This figure is about 10% among school-going adolescents (3) and is reported to be about the same (9.6%) among A/L students in the Nallur Educational Zone in Jaffna district (4).

In recent years, substance use and related social and health problems have risen exponentially worldwide (5), including in Sri Lanka. Based on reports from the National Dangerous Drug Control Board of Sri Lanka, substance-related crimes and arrests are common with young people accounting for a large proportion (6). In 2022, there were over 1500 arrests in the Jaffna district (6) signalling the possibility of an increasing tendency of substance use among adolescents in the Jaffna district.

Adolescent brains are more sensitive to substances and the chances of addiction are greater compared with adults (7). A large body of literature shows that school-based interventions are effective in the prevention of psychoactive drug use and its adverse consequences among adolescents. Universal approaches that target the entire population may be delivered through existing systems and structures, and are known to be cost-effective and less intrusive, making them ideal for adoption in the school setting (8).

Life skills training (LST) has been identified as a substance use prevention strategy encompassing social competence and social influence-based approaches, and may be strengthened with healthy habit formation (9). Studies have demonstrated that LST is an effective school-based substance abuse prevention strategy. In fact, Buhler et al contend that LST is the “single most effective” substance abuse prevention strategy (10)

The National Dangerous Drugs Control Board has highlighted the lack of capacity to treat and rehabilitate substance users in Sri Lanka. Among its strategies to address substance-related issues is a programme to train teachers to facilitate a school-based preventive programme on substance use (11) This study aimed to assess the effectiveness of a school-based LST

intervention to reduce the future risk of substance use among secondary school students in the Jaffna district.

Methods

A quasi-experimental design was used. Based on evidence that school-based interventions among early adolescents are effective (12), Grade 7 and 8 students were selected as the study population. Students were randomly selected from national schools in the Jaffna district. A constructively/factorially validated Substance Use Risk Profile Scale (SURPS), with a 4-point Likert scale, was used parallelly, among control and intervention groups, to assess baseline and post-intervention differences, after base-line (covariate) adjustment. This 23-item tool measures four personality domains, namely, hopelessness, anxiety sensitivity, impulsivity and sensation seeking; measurements in each domain can be used to predict future risk of substance use (12).

Sample size was calculated as for a non-inferior design (13) based on the assumption that the intervention arm would not be inferior to the control arm since the intervention group was exposed to the intervention and the usual school curriculum, while the control arm was exposed only to the school curriculum.

$$N=2((Z_{1-\alpha}+ Z_{1-\beta})/ \delta)^2 X\left(p X (1-p)\right)$$

The above formula was used to calculate the sample size because distribution and dispersion data for the four psychometric domain scores of SURPS tool were unavailable for school-going adolescents. The expected proportion with future risk of binge drinking (41%) was used as the proportion extracted from a study done among school-going adolescents in England (12) After adding a 10% loss to follow up rate, the sample size was calculated to be 106 students each in the intervention and control arms of the study.

Class rooms were selected from four national schools in Jaffna district. The average number of students in a class in national schools is 30 to 35. Hence, we selected 4 class rooms (4x30=120 students) each for the intervention and control arms. To avoid contamination, intervention and control schools were selected ensuring they were located at a distance from each other. In total, 254 students were assigned to the intervention (n=123) and control (n=131) arms of the study.

A brief intervention was designed to encompass social resistance skills training (SRST), normative education (NE) and competence enhancement skills training (CEST). Twelve biweekly brief interventions were conducted for six weeks starting mid-January 2020. SRST and CEST were implemented based on the facilitators' manual of a basic life skills course prepared by the Ministry of Youth and Sport Azerbaijan and UNICEF Azerbaijan (14) while NE was integrated using study materials prepared for the National Drug Prevention Week 2019 by the Presidential Task Force on drug prevention. The control group did not receive any specific intervention.

Ten medical students who had completed their 2nd MBBS exam and four BSc nursing students were trained to implement the study. As it was a quasi-experimental design, proper randomization was not carried out. Hence the pre-assessment score was treated as an independent continuous variable (covariate). Sex and intervention were treated as independent categorical variables; sex was selected as an independent variable because many studies suggest that sex influences substance use; interaction terms were also selected based on the literature.

Baseline and post-interventions scores were found to be not normally distributed. Hence, non-parametric statistical testing was chosen to determine the effect of the intervention. Rank analysis of ANCOVA (Analysis of Co-Variance) Quade's method was used as a non-

parametric alternative to ANCOVA. The dependent variable and covariate were ranked and linear regression performed between the ranks. Then unstandardized residues of rank linear regression were used to run ANCOVA (15–18). The baseline was considered as a covariate; the status of the intervention, sex, and an interaction term (sex*intervention) were assessed after controlling for the effect of the baseline.

Ethical clearance was gained from the Ethics Review Committee of the Faculty of Medicine, University of Jaffna (J/ERC/19/102/DR/0066).

Results

In total, 123 and 131 students participated in the intervention and non-intervention groups, respectively. Table 1 depicts the breakdown of participants by age, grade and sex.

Table 1. Participant characteristics

		Intervention group (n, %)	Non-intervention group (n, %)
Age (in years)	11	59 (48.0)	66 (50.4)
	12	62 (50.4)	65 (49.6)
	13	2 (1.6)	0 (0.0)
Grade	Seven	63 (51.2)	66 (50.4)
	Eight	60 (48.8)	65 (49.6)
Sex	Female	65 (52.8)	63 (48.1)
	Male	58 (47.2)	68 (51.9)
Total		123	131

Table 2 shows the basic distribution of domain scores before and after the intervention among intervention and control arms. Dispersions of scores are not equal among domains or by intervention status indicating the need for non-parametric analysis.

Table 2. Pre- and post-intervention SURPS scores by intervention status and domain

Status of intervention Yes (n=123) No (n=131)	SURPS psychometric domain score	Pre-intervention	Post-intervention
	Hopelessness		
Yes	Mean	13.02	11.94
	Std. deviation	2.38	1.90
No	Mean	14.11	14.35
	Std. deviation	4.96	4.60
	Anxiety sensitivity		
Yes	Mean	12.57	12.33
	Std. deviation	2.92	2.80
No	Mean	11.37	11.17
	Std. deviation	5.12	4.87
	Impulsivity		
Yes	Mean	11.37	10.61
	Std. deviation	2.37	2.00
No	Mean	12.45	12.24
	Std. deviation	4.38	4.15
	Sensation seeking		
Yes	Mean	15.57	14.77
	Std. deviation	3.18	2.87
No	Mean	14.73	14.43
	Std. deviation	6.16	5.96

The LST-based intervention showed effectiveness in reducing the future risk of substance use in relation to the impulsivity and sensation seeking personality domains. Table 3 shows statistically significant differences between the intervention and controls groups after controlling for the effect of the pre-score (base-line), sex and interaction term.

Table 3. Effect of the intervention in the domains of impulsivity and sensation seeking

			Impulsivity				Sensation seeking			
		df	**Sum of squares**	**Mean square**	**F ratio**	**p value**	**Sum of squares**	**Mean square**	**F ratio**	**p value**
Intercept	Hypothesis	1	11.40	11.40	1.99	0.393	0.63	0.63	0.01	0.953
	Error	1	5.73	5.73			113.77	113.77		
Intervention	Hypothesis	1	11035.72	11035.72	320.48	**0.036**	1625.86	1625.86	171.44	**0.049**
	Error	1	34.44	34.44			9.48	9.48		
Sex	Hypothesis	1	6.74	6.74	0.17	0.753	113.77	113.77	11.99	0.179
	Error	1	34.44	34.44			9.84	9.84		
Intervention *sex	Hypothesis	1	34.44	34.44	0.12	0.728	9.84	9.84	0.06	0.810
	Error	250	71258.75	285.04			40896.71	163.59		

However, in the hopelessness and anxiety sensitivity personality domains the LST-based intervention did not show effectiveness (Table 4). Even so, the interaction between sex and intervention in the anxiety sensitivity domain was found to be statistically significant.

Table 4. Effect of the intervention in the domains of hopelessness and anxiety sensitivity

			Hopelessness				Anxiety sensitivity			
		df	**Sum of squares**	**Mean square**	**F ratio**	**p value**	**Sum of squares**	**Mean square**	**F ratio**	**p value**
Intercept	Hypothesis	1	60.83	60.83	0.14	0.772	0.33	0.33	<0.01	0.979
	Error	1	434.01	434.01			312.60	312.60		
Intervention	Hypothesis	1	84756.46	84756.46	35.24	0.106	76.63	76.63	31.86	0.112
	Error	1	2404.90	2404.90			2.41	2.41		
Sex	Hypothesis	1	434.01	434.01	0.18	0.744	312.60	312.60	129.97	0.056
	Error	1	2404.90	2404.90			2.41	2.41		
Intervention *sex	Hypothesis	1	2404.90	2404.90	3.20	0.075	2.41	2.41	0.028	**0.028**
	Error	250	187863.70	751.46			21478.38	85.91		

Discussion

The findings of this quasi-experimental study show that this LST-based intervention may be used to improve the personality domains of impulsivity and sensation seeking in view of reducing the future risk of substance use. The effect of the intervention on hopelessness and anxiety sensitivity domains was not significant with a p value around 0.1, indicating the need for a randomized controlled trial (RCT) to reassess the effectiveness of this intervention.
One salient point, however, is that the effect of the interaction (sex*intervention) term on the anxiety sensitivity domain suggests that the intervention played out differently among males and females. This phenomenon is consistent with a study conducted in France, were predicting cannabis use frequency with the SURPS anxiety sensitivity domain score showed a statically significant interaction with sex (19). This phenomenon needs further exploration.

A primary setback of this study was that the second post-intervention assessment that was planned for three months after the intervention could not be conducted due to the COVID-19 pandemic. After the lockdowns, schools did not function properly for more than a year, and when they functioned, the entry of external individuals was restricted.

Conclusions

Life skills-based training appears to be effective in reducing future risk of substance in the impulsivity and sensation seeking domains. It is recommended that the relevant stakeholders assess the appropriateness of the intervention for inclusion in school curricula in Sri Lanka.

Acknowledgement

We are grateful to the study participants and the volunteers who implemented the intervention.

Conflict of interest

The authors have no conflicts of interest to declare.

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CP 14

Potential pharmacokinetic drug-drug interactions in patients attending medical clinics at Teaching Hospital Jaffna: A prescription analysis

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Abstract

Background and objective: Patients with chronic medical conditions often take multiple medications and are at the risk of developing clinically significant drug-drug interactions (DDI). Many DDI alter pharmacokinetics and thereby the effects of medications. This prescription analysis aimed to describe the potential pharmacokinetic DDI and associated factors among patients attending medical clinics at Teaching Hospital Jaffna.

Methods: This was a descriptive cross-sectional study. As per the sample size recommended by the World Health Organization for prescription analysis, we analysed 600 prescriptions of patients attending medical clinics at Teaching Hospital Jaffna. Systematic sampling was used to select the prescriptions from all clinics. British National Formulary (BNF edition 80) was used as the pharmaceutical reference to identify pharmacokinetic DDI and categorise them as mild, moderate and severe. Chi-square test was used to determine the association between age, sex and polypharmacy (≥5 drugs) and the presence of pharmacokinetic DDI (critical value 0.05).

Results: Of the 600 prescriptions, the majority belonged to females (n= 327; 54.5%). Mean age was 57.5 (SD=14.6) years. A total of 112 potential pharmacokinetic DDI were identified in 86 (14.3%) prescriptions. Of them, 49 (43.8%) were moderate and 63 (56.2%) were severe DDI. Cardiovascular drugs contributed the majority of DDI (85%). The presence of potential pharmacokinetic DDI was statistically associated with age ($p=0.01$) and polypharmacy ($p<0.001$), but not sex. Prescriptions of older patients and those prescribed ≥5 drugs were more likely to contain potential pharmacokinetic DDI.

Conclusion: Patients attending the medical clinics are at risk of developing clinically significant pharmacokinetic DDI. While cardiovascular medications account for a large number of potential pharmacokinetic DDI, elderly patients exposed to polypharmacy may be at greater risk. Raising awareness among doctors, regular prescription review and closely monitoring those at risk may help to reduce the occurrence of clinically significant DDI.

Keywords: Pharmacokinetic interactions, Drug-drug interactions, Polypharmacy, Chronic diseases, Jaffna

Introduction

With the rising burden of chronic non-communicable diseases, many patients are prescribed multiple medications to manage their medical problems. These medications can interact with each other and alter their clinical effects in harmful and beneficial ways. Such interactions between medications are referred to as drug-drug interactions (DDI) [1].

Drug-drug interactions are broadly classified as pharmacodynamic and pharmacokinetic interactions. Pharmacodynamic interactions are those that interfere with the action of the medicines at target organs and pharmacokinetic interactions are those that interfere with the absorption, distribution, metabolism or excretion of medicines [1]. Clinically significant DDI are defined as interactions "associated with either toxicity or loss of efficacy that warrants the attention of healthcare professionals" [2]. Adverse DDI may result in increased hospitalization and prolonged hospital stays, in addition to compromising patient safety [3].

Patients receiving treatment at medical clinics usually have multiple morbidities, are prescribed several medications, and would be at risk of developing clinically significant DDI. Alteration in the kinetics of a medicine may increase or decrease its concentration, resulting in clinically significant DDI and consequent toxic outcomes or therapeutic failures. The aim of the study was to describe potential pharmacokinetic DDI and the association of age, sex and polypharmacy (≥5 drugs) with the presence of potential DDI in the prescriptions of patients attending medical clinics at Teaching Hospital Jaffna.

Methods

This institution-based descriptive cross-sectional study analysed 600 prescriptions of patients attending the medical clinics of Teaching Hospital Jaffna. The World Health Organization recommends a minimum sample size of 600 for prescription analysis [4]. Medical clinics at Teaching Hospital Jaffna were conducted by four medical units at the time of data collection (August 2021). Around 6000-8000 patients were being followed up by each medical unit. We extracted data from 150 prescriptions from each unit using systematic sampling.

Potential pharmacokinetic DDI were identified and categorized using the British National Formulary (BNF edition 80; Appendix 1: Interactions). Pharmacokinetic interactions were categorised as mild, moderate or severe. Age was categorised as <40 years, 40-60 years and >60 years. Polypharmacy was defined as taking five or more medications [5]. Standard descriptive statistics were used to describe key variables. The chi-square test was performed to determine the association between the presence of potential pharmacokinetic DDI and age, sex and polypharmacy. A p value less than 0.05 was considered significant.

Administrative approvals were obtained before commencing data collection. Ethics approval was obtained from the Ethics Review Committee of the Faculty of Medicine, University of Jaffna.

Results

Of the 600 prescriptions, 273 (45.5%) belonged to males and 327 (54.5%) to females. Mean age of the patients was 57.5 (SD=14.6) years. Most were in the >60 years age group (46%, n=276), followed by 40-60 years (42.3%, n=254) and <40 years (11.7%, n=70). Polypharmacy was prevalent in nearly half of the prescriptions (n=294; 49%).

A total of 112 potential pharmacokinetic DDI were identified in 86 prescriptions (14.3%). Of them, 49 (43.8%) were moderate and 63 (56.2%) were severe. There were no minor DDI identified. The number of DDI per prescription ranged from 1 to 3 where the number of prescriptions with one, two and three DDI were 65, 18 and 3, respectively. Potential pharmacokinetic DDI were present more frequently in the prescriptions of females (55.4%, n=62) than males (44.6%, n=50). The presence of potential pharmacokinetic DDI increased with age; the highest proportion was recorded in the >60 years age group (59.8%, n=67), followed by 38.4% (n=43) in the 40-60 years age group and 1.8% (n=2) in those less than 40 years. More than 90% of potential DDI were present in prescriptions with polypharmacy (Table 1).

Table 1. Distribution of DDI by age, sex and polypharmacy (n=112)

		n	%
Age (years)	<40	2	1.8
	40 – 60	43	38.4
	>60	67	59.8
Sex	Female	62	55.4
	Male	50	44.6
Polypharmacy (≥5 drugs)	Yes	103	92.0
	No	9	8.0

A total of 21 drug pairs were implicated in the potential pharmacokinetic DDI. At least one cardiovascular medication was involved in the majority of DDI (85%). The five most frequent drug pairs that could cause DDI were aspirin and hydrochlorothiazide (15.2%), atorvastatin and diltiazem (10.7%), aspirin and metolazone (9.8%), aspirin and beclomethasone (8%), and clopidogrel and omeprazole (7.1%).

Table 2 shows the association of age, sex and polypharmacy with the presence of potential pharmacokinetic DDI. There was a statistically significant association between the presence of potential pharmacokinetic DDI and age group (p=0.01) and polypharmacy (p<0.001).

Table 2. Factors associated with pharmacokinetic drug-drug interactions (n=600)

Factor	**Presence of DDI**		**X^2, df**	**p value**
	Yes	**No**		
	n (%)	**n (%)**		
Age				
<40 years	2 (2.9)	68 (97.1)	9.153, 2	0.01*
40-60 years	37 (14.6)	217 (85.4)		
>60 years	47 (17.0)	229 (83.0)		
Sex				
Male	40 (14.7)	233 (85.3)	0.041, 1	0.839
Female	46 (14.1)	281 (85.9)		
Polypharmacy				
Yes	77	217	66.005, 1	<0.001*
No	9	297		

* Statistically significant (p≤0.05)

Discussion

Potential pharmacokinetic DDI were prevalent in 14.3% of the prescriptions in the present study. For the purposes of comparison, we found only one local study on potential DDI carried out at a pharmacy outlet of the State Pharmaceutical Corporation in Anuradhapura using the Medscape drug interaction checker to identify potential DDI. The study reported that 53% of the prescriptions had DDI [6]. While the methods used in the two studies to identify potential DDI were different, the Anuradhapura study analysed both pharmacokinetic and pharmacodynamic DDI. Studies show that the proportion of pharmacokinetic DDI is generally lower than pharmacodynamic DDI. For instance, a Bulgarian study reported that 12.4% of potential DDI were pharmacokinetic, while a study from Karachi, Pakistan, reported that 37.9% of potential DDI identified were pharmacokinetic [7,8]. The lower prevalence of DDI in our study compared to the Anuradhapura study may be explained by the relatively lower incidence of pharmacokinetic DDI.

The Anuradhapura study found that 19.3%, 73.9% and 6.8% of DDI were minor, significant and serious, respectively [6]. In our study, the majority of DDI were severe (56.2%) and the rest were moderate (43.8%). Indeed, there were no minor DDI in our study. These discrepancies may also be explained by the different methods used as well as our focus on pharmacokinetic DDI.

We found that the five top drug pairs contributing to potential pharmacokinetic DDI at Teaching Hospital Jaffna had at least one cardiovascular medication. A similar finding was reported in a countrywide study conducted on out-hospital drug dispensing centres in France where four out of five of the most represented contraindicated or discommended pairs involved cardiovascular medications [9]. Findings of a study conducted in primary care centres in Brazil also supports this observation [10].

We found that the prescriptions of older patients and those with polypharmacy were more likely to have potential pharmacokinetic DDI. While similar observations are reported in the literature [10-14], our findings suggest that elderly patients with co-morbidities may be at greater risk of exposure to DDI and warrant close monitoring and follow up and frequent prescription reviews.

This study has some limitations. We only assessed potential pharmacokinetic DDI. However, prior research suggests that pharmacodynamic interactions make up a larger proportion of DDI. Therefore, our findings likely underestimate the presence of potential DDI. As we did not assess clinical outcomes, we are unable to comment on the clinical significance of the potential DDI identified. Lastly, the prescriptions we analysed did not contain information on comorbidities. Therefore, the influence of disease condition on the presence of potential DDI was not assessed.

Conclusion

A substantial proportion of prescriptions issued to patients attending medical clinics at Teaching Hospital had potential pharmacokinetic DDI, and the majority of them were in the severe category. Based on our results, the risk of clinically significant adverse outcomes occurring as a result of DDI may be higher among elderly patients, those exposed to polypharmacy and patients on cardiovascular medication. Raising awareness among health professionals, regular prescription review and close monitoring of patients at risk could reduce the adverse outcomes of clinically significant potential DDI.

Acknowledgement
We thank the staff of the medical clinics, Teaching Hospital Jaffna for their assistance with data collection.

Conflict of interest
None of the authors have conflicts of interest that are directly or indirectly relevant to this study.

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CP 15

Knowledge, attitude, and practices related to antenatal care among primiparous pregnant women attending an antenatal clinic in Kopay, Jaffna District, Sri Lanka

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Abstract

Background and objective: Knowledge on antenatal care (ANC) empowers women to be aware of their health status during pregnancy. The objective of this study was to assess knowledge, attitude, and practices related to ANC among primiparous pregnant women in their second and third trimesters visiting an antenatal clinic in Kopay, Jaffna District.

Methods: A clinic-based cross-sectional study was carried out at the antenatal clinic in the office of the Medical Officer of Health (MOH) – Kopay in Jaffna district. An interviewer-administered questionnaire consisting of socio-demographic profile, knowledge on ANC, attitude towards ANC and practices related to ANC was used for data collection. The data were analyzed by using SPSS v23.0. Standard descriptive statistics were applied.

Results: In total, 276 primiparous mothers in their second and third trimesters participated in the study. The mean age of the mothers was 29.0 (±5.2) years. Good and moderate knowledge was recorded among 49.3% (n=136) and 40.9% (n=113) of mothers, respectively; only 9.8% (n=27) had poor knowledge. Positive attitude was recorded among 95.3% (n=263) of mothers, while 4.7% (n=13) had a neutral attitude and none had a negative attitude. The proportion of mothers with good and moderate practice was 56.9% (n=157) and 39.9% (n=110), respectively; only 3.3% (n=9) had poor practice. Notably, 72.5% of mothers had registered with the public health midwife before 8 weeks of gestation.

Conclusion: The study shows that most primiparous mothers have good or moderate knowledge and a positive attitude towards ANC, with commendable early registration for ANC. However, there is a need for targeted interventions to improve ANC education and support for the small percentage of mothers with poor knowledge and practices. These findings

can guide the formulation and design of appropriate strategies to intervene to address the gap in knowledge, attitude and practices, in ANC in Jaffna district.

Keywords: Antenatal care, Knowledge, Attitude, Practice, Maternal health

Introduction

Antenatal care (ANC) is specialised and general care that is provided to women during pregnancy [1]. ANC optimizes the health of the mother and foetus for the duration of gestation in view of achieving the best possible outcome [2]. Even though pregnant women receive ANC services through antenatal clinics, there are various maternal factors that determine access to and utilization of ANC, which ultimately determine the outcome of the pregnancy. Among them, knowledge, attitude and practices related to ANC are of crucial importance. By addressing the factors that influence ANC utilization, healthcare providers can enhance the uptake of ANC services, thereby ensuring healthier pregnancies and safer childbirth experiences. This study aimed to assess knowledge, attitude, and practices related to ANC among pregnant women attending an antenatal clinic in the Kopay Medical Officer of Health (MOH) area in the Jaffna district.

Methods

A clinic-based descriptive cross-sectional study was carried out among primiparous pregnant women in their second and third trimesters attending the antenatal clinic held in the office of the MOH – Kopay. Sample size was calculated with a proportion of 64% representing the prevalence of positive ANC practices in a study carried out among pregnant women in Lahore, Pakistan [2]. Level of confidence was 95% with z being 1.96 and the non-response rate 10%. The required sample size was 276. Consecutive sampling was used to recruit participants until sample size was achieved.

An interview-administered content-validated questionnaire consisting of sections on socio-demographic details, knowledge, attitude, and practices related to ANC was developed. Data collection was carried out from August to October 2023 in the clinic setting, while women were awaiting their turn for the consultation with the MOH. Statistical Package for Social Sciences (SPSS v23) was used for data analysis. Good, moderate and poor knowledge was considered as >70%, 50-70% and <50%, respectively. A 5-point Likert scale (strongly agree to strongly disagree) was used to compute an attitude score ranging from 15 to 85 with a higher score reflecting positive attitude. Total scores were grouped into negative attitude (15-35), neutral attitude (36-56), and positive attitude (57-85). Good, moderate and poor practice were classified as >70%, 50-70% and <50%, respectively.

Ethics approval was obtained from the Ethics Review Committee, Faculty of Medicine, University of Jaffna (J/ERC/23/148/NDR/0298).

Results

The mean age of the mothers was 29.0 (±5.2) years, with a range of 16-42 years. The percentage of teenage mothers was 2.6% (n=7), while 12.3% (n=34) were of advanced maternal age (>35 years).

Knowledge on antenatal care

Good and moderate knowledge was recorded among 49.3% (n=136) and 40.9% (n=113) of the mothers respectively, while only 9.8% (n=27) had poor knowledge.

Most mothers had knowledge on the importance of registering for ANC (93.8%) and regular antenatal checkups (99.6%).

Majority were aware that folic acid (84.4%), iron (76.8%), vitamin C (79.0%), calcium (85.5%) and vitamin B complex (61.6%) should be commenced in the preconception period and that Thriposha (55.4%) should be taken during pregnancy. Most knew these nutritional supplements were necessary to avoid foetal neural tube defects (67.0%), but fewer were aware of their benefits for the foetal skeletal system (17.0%).

Most mothers knew that blood tests, including hemoglobin level (98.2%), blood sugar level (OGTT) (90.6%), VDRL (75.7%), and blood grouping (88.0%), as well as urine sugar (81.5%) are performed during pregnancy. A large majority knew about the dental check-up (96.7%), but fewer were aware of malaria screening (64.5%) and urine protein tests (37.7%).

Most knew that nausea (94.6%) is a common problem during pregnancy; awareness on other problems like varicose veins (17.4%), ankle swelling (56.9%), back ache (65.9%), and constipation (52.5%) was comparatively less. Although most were aware of danger signs like vaginal bleeding (83.1%) and decreased foetal movements (89.5%), fewer identified severe headache (27.5%), excessive vomiting (34.4%), and high fever (62.3%) as danger signs.

Most knew that diabetes (74.6%), hypertension (76.1), urinary tract infection (59.1%), and anaemia (61.6%) are common diseases that occur during pregnancy, but over a quarter did not. Similarly, while most knew that intermittent back ache (79.0%), sudden gush of fluid through the vagina (75.0%), and blood-stained vaginal mucus (60.5%) are signs of the onset of labour, a significant proportion were not aware of these symptoms.

Most mothers were aware: that simple exercises should be followed during pregnancy (90.9%); that infections which affect the mother during pregnancy could also affect the fetus (80.8%); that pregnant women should avoid heavy work, especially during the first trimester (93.5%); and that emotions of the mother such as anger, stress and anxiety may affect the foetus (94.6%).

Attitudes towards antenatal care

Positive attitude was recorded among 95.3% (n=263) while only 4.7% (n=13) of the mothers had neutral attitude. None of the participants had scores compatible with a negative attitude. The distribution of attitudes in the sample is shown in Table 1.

Majority (67.8%) of the mothers had a positive attitude towards early antenatal booking (61.6%), screening for HIV infection (58.0%), vitamin supplementation and good dietary habits (82.2%), taking iron and folic acid tablets during pregnancy (76.8%), regular antenatal follow-up (80.8%), early preparation for the delivery (75.7%), ultrasound scan as advised by the doctor (59.8%), and checking blood pressure regularly (66.7%). It is noteworthy that 68 (24.6%) mothers strongly agreed/agreed that consuming alcohol during pregnancy is good for the foetus and that 31 (11.2%) remained neutral about exercise during pregnancy (Table 2).

Table 1: Attitudes towards antenatal care

Attitudes	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)
Early antenatal booking is good for my pregnancy	187 (67.8)	70 (5.4)	12 (4.3)	6 (2.2)	1 (0.4)
I will go for antenatal booking before the third month of pregnancy	170 (61.6)	68 (24.6)	16 (5.8)	20 (7.2)	2 (0.7)
I will allow the doctor to take blood for screening for HIV infection	160 (58.0)	92 (33.3)	13 (4.7)	4 (1.4)	7 (2.5)
I believe that vitamin supplements taken as advised by the doctor and good dietary habits are good for the foetus	227 (82.2)	45 (16.3)	3 (1.1)	1 (0.4)	--
I will not miss taking iron and folic acid tablets during pregnancy	212 (76.8)	59 (21.4)	5 (1.8)	--	--
I believe exercise during pregnancy is necessary	125 (45.3)	114 (41.3)	31 (11.2)	1 (0.4)	5 (1.8)
I believe regular antenatal follow-up is good to monitor maternal and foetal health	223 (80.8)	47 (17.0)	4 (1.4)	2 (1.7)	--
I will prepare early for the delivery	209 (75.7)	58 (21.0)	8 (2.9)	1 (0.4)	--
I believe that smoking is harmful to the foetus	214 (77.5)	40 (14.5)	6 (2.2)	3 (1.1)	13 (4.7)
I feel alcohol consumption during pregnancy is good for foetus	56 (20.3)	12 (4.3)	11 (4.0)	36 (13.0)	161 (58.3)
I will do ultrasound scans as advised by the doctor to monitor foetal growth	165 (59.8)	77 (27.9)	10 (3.6)	9 (3.3)	15 (5.4)
I feel home delivery is better than hospital delivery.	23 (8.3)	14 (5.1)	10 (3.6)	53 (19.2)	176 (63.8)
I will check blood pressure regularly during pregnancy.	184 (66.7)	73 (26.4)	4 (1.4)	5 (1.8)	10 (3.6)
If I get any problem during pregnancy, I would report to the health centre.	190 (68.8)	69 (25.0)	8 (2.9)	5 (1.8)	4 (1.4)
I believe tetanus toxoid protects the baby from tetanus.	174 (63.0)	69 (25.0)	6 (2.2)	7 (2.5)	20 (7.2)

Practices on antenatal care

Good and moderate practices related to ANC were recorded among 56.9 (n=157) and 39.9% (n=110) of mothers, respectively, while only 3.3% (n=9) of the mothers had poor practice.

The majority of mothers had registered with their midwife before 8 weeks of gestation (72.5%), attended antenatal clinics regularly (93.1%) and had taken folic acid before pregnancy (82.2%). Although folic acid is crucial in preventing neural tube defects during the early stages of pregnancy, 10.1% and 7.6% of the sample had taken folic acid after confirming pregnancy and

after registering with their midwife, respectively. A large proportion reported eating a healthy diet, including green leafy vegetables (89.5%), meat/ fish (87.0%), milk (87.0%), and whole grains (76.4%), while a sizeable minority continued to consume fast foods (18.5%) and sugar rich foods (7.2%).

In the sample, 34.8%, 58.3% and 6.9% of mothers reported receiving one, two, and three doses of tetanus toxoid during the current pregnancy. Notably, 97.5% reported adhering to the drugs given at the clinic. Although iron tablets are commonly used to treat iron deficiency anaemia, a condition characterized by a lack of sufficient iron to produce healthy red blood cells, only 52.2% took iron tablets one hour apart from meals, and 29.3% took them alone, while 15.9% had them with calcium and 5.1% with milk/tea.

A large majority (87.7%) of mothers had attended antenatal classes; most attended two classes (32.6%), while 26.1%, 23.9% and 1.4% attended one, three and four classes, respectively. Notably, 63.8% of spouses accompanied mothers to antenatal clinics.

Life style related practices are shown in Table 2. The majority of mothers reported having increased their water intake (91.3%), not practiced fasting (80.1%), had no exposure to passive smoking (88%), not consumed alcohol (94.9%) and did not take medicines without consulting a doctor (90.6%).

Table 2. Lifestyle-related practices during the current pregnancy

Practices	Yes	%
Did you increase your water intake?	252	91.3
Have you fasted?	55	19.9
Have you been exposed to passive smoking?	33	12.0
Have you ever taken medicine without consulting a doctor?	26	9.4
Do you share Thriposha with family members?	111	40.2
Have you ever consumed alcohol?	14	5.1

Discussion

Knowledge, attitude, and practices related to ANC are crucial as they directly impact maternal and foetal health, and if optimal could contribute towards ensuring a safe pregnancy with fewer complications. Informed and positive practices foster better health outcomes and empower expectant mothers with confidence and control over their well-being.

In our study, 40.9% of mothers had good knowledge, while in Karnataka, India, it was reported that 48.1% had good level of knowledge about ANC [5]. These comparisons need to be interpreted with caution due to both methodological and contextual differences in the two studies. In our study, the percentage of mothers with poor knowledge was 9.8%, while it was much higher (45%) among mothers who followed ANC in a tertiary care hospital of Gurugram Haryana, India [7]. This disparity may be due to differences in literacy levels as well as access to healthcare in the two settings [7, 8]. Poor knowledge could ultimately result in late registration for ANC, health screening and delayed detection of complications [7]. In the present study, a considerable proportion of mothers were unaware about common problems during pregnancy, and more worrying had significant knowledge gaps regarding the danger signs. These areas need to be addressed urgently in view of reducing maternal morbidity and mortality.

In our study, positive attitude was recorded among 95.3% (n=263) of mothers, and in India it was 78.3% [9] while in Pakistan [2] and Yemen [10], the proportion with positive attitude was lower at 61% and 68%, respectively. These differences may be due to poor perceptions regarding ANC [8] and the unavailability of services in some of these settings [11]. Noteworthy is that a sizeable proportion of mothers in our setting believed that alcohol consumption was good for the foetus and also responded neutrally regarding the necessity of exercise during pregnancy, revealing significant gaps in attitudes.

In our study, over half (56.9%) recorded scores compatible with good practice. A study conducted in Lahore showed a similar percentage (61%) [2], while in another study in Yemen the majority (67%) had moderate practice [10]. These proportions appear to contradict the disparities in knowledge and attitudes in these settings, paving the way for potential areas for further exploration through research. In our setting, only a quarter (25.3%) of the mothers had attended three or more antenatal classes in line with national guidelines [12]. This may be due to inequity in ANC utilization among less privileged social groups, as has been established in other settings [13]. Moreover, a significant proportion did not commence folic acid prior to conception and did not adhere to practices that optimize iron absorption. Further research is needed to identify the reasons for such suboptimal antenatal practices.

Conclusion

This study suggests that the majority of pregnant mothers attending the antenatal clinic at Kopay Medical Officer of Health (MOH) have good or moderate knowledge regarding ANC. Additionally, most mothers have a positive attitude towards ANC. The practices concerning pregnancy care, particularly early attendance for antenatal visits, are also commendable. However, we identified several important gaps in knowledge, attitudes and practices. The participants had relatively less knowledge on certain danger signs and symptoms of onset of labour, and had problematic attitudes regarding alcohol consumption and exercise during pregnancy. Suboptimal practices related to the intake of micronutrients were also present in the sample. Together these findings indicate a need for targeted interventions to improve ANC education to address the gaps in knowledge, attitude and practices related to ANC.

Acknowledgement

We acknowledge the contribution of pregnant mothers, the Supervising Public Health Midwife and Public Health Midwives of Kopay MOH division to this study.

Conflict of interest

Authors declare that they have no potential conflicts of interest.

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CP 16

Anatomical variations of the axillary artery and brachial plexus: Insights from a cadaveric study

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Abstract

Background: Typically, the subclavian artery becomes the axillary artery after crossing the first rib, extending from behind the midpoint of the clavicle up to the level of the inferior border of teres major and continues as the brachial artery beyond teres major. Depending on the relation to pectoralis minor, the axillary artery is divided into three parts, with specific branches arising from each part. This case report describes a significant anatomical variation observed in the axillary artery and neural structures around it during cadaveric dissection on a 65-year-old male of unknown medical history.

Case description: In this case, the right axillary artery bifurcated into two branches with nearly equal diameter. The medial continued as the brachial artery, while the lateral continued as a common trunk. This common trunk then branched into vessels of the third part of the axillary artery before continuing as the profunda brachii artery. Medial and lateral roots of the median nerve embraced this common arterial trunk, instead of cuddling the third part of the axillary artery. The lateral root crossed over the common arterial trunk to join the medial root to form the median nerve lateral to the brachial artery. Furthermore, the median nerve traversed deep to the brachial artery halfway down the arm to reach its medial aspect. On the left side, slight clockwise rotational changes in the orientation of the brachial plexus cords around the axillary artery, accompanied by altered positioning of the median nerve were noted.

Conclusions: These findings underscore the importance of recognizing anatomical variations in interventional and surgical planning involving the axillary artery. Understanding such variations is crucial for minimizing procedural risks such as injury to the brachial plexus and optimising patient outcomes.

Key words: Anatomical variation, Axillary artery, Brachial artery, Profunda brachii artery, Median nerve

Background

In humans, the subclavian artery becomes the axillary artery after crossing the first rib to supply the upper limb and extends from behind the midpoint of the clavicle up to the level of the inferior border of teres major. Based on its relation to the pectoralis minor, the axillary artery is divided into three parts. The superior thoracic artery arises from the first part, while the lateral thoracic artery and thoraco-acromial artery originate from the second part. The three cords of the brachial plexus lie medial, lateral, and posterior to the second part of the axillary artery. The third part of the axillary artery gives rise to the anterior and posterior circumflex humeral arteries and subscapular artery. Beyond the teres major the axillary artery continues as the brachial artery and travels medial to the biceps brachii, and in the upper brachium, lies anterior to the long head of the triceps. At the level of the neck of the radius in

the cubital fossa, the brachial artery divides into radial and ulnar arteries. The median nerve after forming from the lateral and medial cords of brachial plexus, at the third part of axillary artery, descends lateral to the brachial artery. It crosses over the brachial artery half way down the arm and runs medial to the artery. Distal to the teres major, the profunda brachii artery arises from the lateral aspect of the brachial artery and travels down with the radial nerve and ends up in its radial and middle collateral branches. In addition, the superior and inferior ulnar collateral branches arise from the medial aspect of the brachial artery (1)

Case description

During the cadaveric dissection at the Faculty of Medicine, University of Jaffna, we discovered neurovascular abnormalities in the upper limb of a 65-year-old male cadaver, whose previous medical history was unknown. On the right side, the third part of the axillary artery bifurcated 71.28mm distal to the midpoint of the clavicle into two vessels of almost equal diameter. The medial branch continued downwards as the brachial artery (Fig. 1 & 2). The radial artery and ulnar artery originated at 118.40mm proximal to the level of the neck of the radius (Fig 1 & 3) and both arteries followed the normal course in the forearm and hand.

The lateral branch emerged as a common trunk. Roots for the median nerve embraced this common arterial trunk, instead of cuddling the third part of the axillary artery. The lateral root of the median nerve coursed over the common trunk from lateral to medial to join the medial root and the median nerve was formed lateral to the brachial artery (Fig 1 & 2). The median nerve travelled distally and crossed behind the brachial artery halfway down the arm to reach the medial aspect of the brachial artery (Fig 1 & 3).

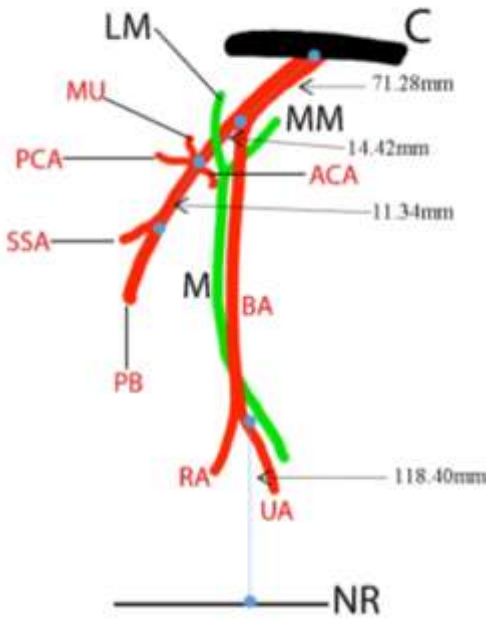

Figure 1: Schematic diagram of the findings in the right axilla and arm. **ACA**: Anterior circumflex humeral artery, **BA**: Brachial artery, **C**: Clavicle, **LM**: Lateral root of median nerve, **M**: Median nerve, **MM**: Medial root of median nerve, **MU**: Muscular branch, **NR**: Level of the neck of the radius, **PB**: Profunda brachii artery, **PCA**: Posterior circumflex humeral artery, **RA**: Radial artery, **SSA**: Subscapular artery, **UA**: ulnar artery

The common arterial trunk gave off both circumflex humeral arteries and muscular branches 14.42mm distal to its origin and the subscapular artery originated 11.34mm distal to the above branches (Fig 1). After giving off these branches (which usually originate from the third part of the axillary artery), the common trunk continued as the profunda brachii artery (Fig 1)

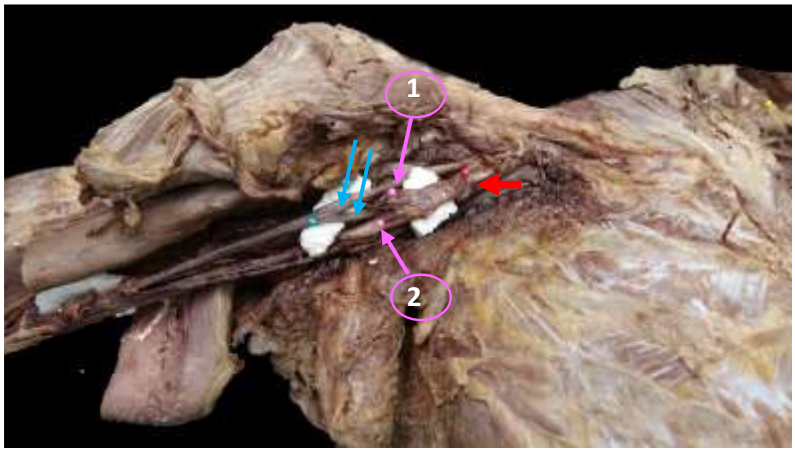

Figure 2: The emerging right axillary artery (Red pointer) divides into two branches (purple pointers); one continues as the brachial artery (purple-2) and the other branch continues as a common trunk (purple-1) which is embraced by the lateral and medial roots of the median nerve (Blue pointers)

accompanying the radial nerve. The profunda artery ran its normal course in the right arm. On the left upper side, the brachial plexus cords were slightly rotated in a clockwise manner, resulting in changes in the orientation of the cords in relation to the axillary artery. The median nerve was identified deep to the brachial artery on the left side as well.

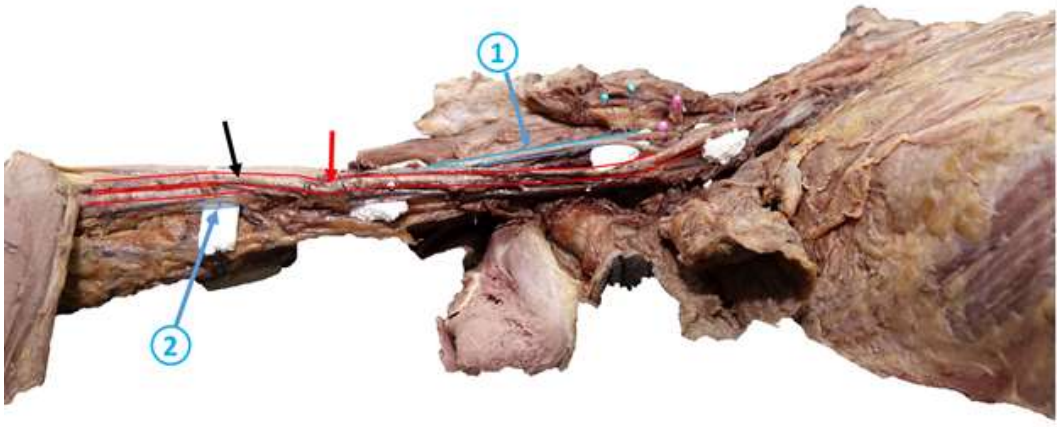

Figure 3: The median nerve forms on the right side lateral to the brachial artery (Blue arrow 1). It then travels distally, crossing deep beneath the brachial artery (Black arrow) before shifting medially in relation to it (Blue arrow 2). The bifurcation of the brachial artery is indicated by the red arrow.

Discussion

The axillary artery customarily gives off six branches: a single branch from the first part, two branches from the second part and three branches from the third part (1). Considerable variations in the independent origin of the branches of the axillary artery, and in the course and branching pattern of the axillary artery were documented (2–6). The present case showed a variant where a common trunk arising from the third part of the axillary artery gave off branches that usually originate independently from the third part of the axillary artery before continuing as the profunda brachii artery. Ramesh Rao et al. reported a case with similar findings, where the profunda brachii artery additionally gave off superior and inferior ulnar collateral arteries, which usually originate from the brachial artery (2). A case report by Naveen et al further support our findings, although the common trunk was larger in diameter than the brachial artery and equal in size to the axillary artery (7). Venieratos et al encountered a similar variant in the third part of the axillary artery, where the common trunk gave off the ulnar collateral artery in addition to the branches of the third part of the axillary artery before continuing as the profunda brachii artery (3). A similar variant of the branching of the third part of the axillary artery was reported by Cavdar et al, but the abnormal trunk was smaller in diameter compared to the axillary artery and superficial brachial artery (8). Our observation is

supported by the finding of George et al. where the common trunk bifurcated into a common circumflex humeral-subscapular trunk and the profunda brachii artery (4) Another case reported by Vijaya et al. showed similar origin of an abnormal common trunk from the third part of the axillary artery where the profunda brachii artery was absent and the common trunk gave off the radial collateral and middle collateral branches in addition to the branches of the third part of the axillary artery (5).

The present case showed division of the brachial artery into radial and ulnar arteries at a higher level. Sawant et al. described a case where the first part of the axillary artery divided into superficial and deep branches and all the branches of the axillary artery and profunda brachii artery arose from the deep branch. The superficial branch descended as the brachial artery following the normal course and ended at the neck of the radius by dividing into radial and ulnar arteries (6). Yoshinaga et al. reported a unilateral variation of the course of the brachial artery which travelled superficial to the ulnar and median nerves from posterior aspect to anterior in the right arm. However, contrary to our case, this superficial brachial artery gave rise to the profunda brachii artery where it became the inferior ulnar collateral artery (9). Satyanarayana et al. reported an abnormal high bifurcation of the brachial artery in to radial and ulnar arteries at the level of the coracobrachialis insertion in the right arm (10). They further stated that the brachial artery gave off its branches prior to bifurcation. A similar case was reported by Jayasabarinathan et al. where unusual bifurcation was observed in the left arm at the level of the lower border of teres major and the ulnar artery was found medial to the median nerve in the cubital fossa (11). In both cases, similar to our case, the course of the radial and ulnar arteries was normal in the forearm.

The medial root of median nerve, arising from the medial cord of brachial plexus, usually crosses in front of the third part of the axillary artery and joins the lateral root to form the median nerve lateral to the brachial artery (1) We found that the common trunk was embraced by the two roots of the brachial plexus which has been documented by previous researchers (2,4,7).

Conclusions

This case report adds to the literature on anatomical variations in major arteries of the upper limb. Knowledge of neurovascular variations would explain unexpected signs and symptoms and help to plan interventional or surgical procedures. As the axillary artery is often used for arterial cannulation and in other surgical procedures, recognising the anatomical deviations would help to prevent complications.

Acknowledgement

We would like to extend our sincere thanks to the non-academic staff of the Department of Anatomy, Faculty of Medicine, University of Jaffna, for their invaluable assistance with dissection and photography.

Conflict of interest

None of the authors have any conflicts of interest to declare.

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ISBN 978-624-6150-33-4

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