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Editorial

The Right to Learn and Work with Dignity is a Fundamental Human Right

Several studies around the world have shown that the cost of sexual harassment in workplaces is immense. Among other things, sexual harassment reduces commitment to work and creates a sense of fear and dissatisfaction among those who have been victimised. These in turn lead to poor productivity and negative outcomes for the institution.

The “Code of Conduct and Guidelines on Preventing Sexual Harassment in Workplaces,” jointly published by the International Labour Organization (ILO) and the Employers’ Federation of Ceylon (EFC), states that sexual harassment is essentially about the exertion of power and control over the person who is subject to it. (1)

Sexual harassment can be defined as an offensive act that inherently has a sexual or gender intent. The act can be verbal, physical, gestural, visual, written, or electronic/digital. Although sexual harassment has been recognised as “an occupational hazard” since the Industrial Revolution, it was only in the 1970s that criminal laws against it were created. Despite strict legislation in many countries, the incidence of sexual harassment is on the rise, according to the WHO. (2)

Although more than 70% of its workforce is female, it is most disturbing that sexual harassment in the healthcare sector is rampant. The nature of the work, including working hours, intensity, and working physically close to each other makes healthcare a vulnerable workplace for sexual harassment. (2)

A systematic review on Sexual Harassment against Female Nurses showed that the prevalence of harassment was 43% (10 – 87%). Of these, 47% were by patients while 41% were by physicians. (3) In a qualitative study conducted among nurses in Sri Lanka, nurses reported that sexual harassment by male doctors was a “regular and expected” part of the work life of a female nurse. While explicit physical abuse was rare cheap flirtations and vulgar jokes made in front of patients and other staff were

common. The authors conclude that these negative or derogatory expressions of the nursing profession may impact the likelihood of individuals joining the nursing career. This could influence the overall shortage of nurses in Sri Lanka. (4)

Medical students and postgraduate trainees make another group vulnerable to sexual harassment. In a Canadian study, 188 students reported 807 incidents, and 98% who reported some form of sexual harassment were females. The authors noted a picture of social, educational, and individual conditions under which sexual harassment becomes normalised by faculty, peers, and victims. Students often tried to ignore harassment despite finding it confusing, upsetting, and embarrassing. A study done in San Francisco, USA showed that 73% and 11% of female and male residents respectively experienced sexual harassment. The harassers of the female trainees were of high professional status. Only two women reported the incidents because of a lack of confidence in any remedial action. (5)

A cross-sectional study done in a Swiss medical school, after adjusting for co-variables found an association between being targeted by sexism/harassment and risk of depression (OR 2.29, 95% CI 1.54 to 3.41, $p < 0.001$), suicidal ideation (B coefficient (B) 0.37, $p < 0.001$) and anxiety (B 3.69, $p < 0.001$), cynicism (B 1.46, $p = 0.001$) and emotional exhaustion (B 0.94, $p = 0.044$) components of burnout, substance use (B 6.51, $p < 0.001$) and a recent mental health consultation (OR 1.78, 95% CI 1.10 to 2.66, $p = 0.005$). This study underscores the grave psychological impact of sexual harassment (6). Several incidents of patients and bystanders engaging in sexual harassment of healthcare staff have been reported. Some of them could be life-threatening, such as the recent episode of a trainee doctor being raped and murdered in Kolkata, India, by a person who was supposed to be an attendant to police patients. (7) According to the aforementioned systematic review, almost 60% of sexual harassment was by a patient or bystander (3).

In summary, healthcare staff and students are a vulnerable population to sexual harassment. Harassment may come in any form, verbal, gestural, physical, written or electronic; subtle, or obvious. It is illegal and unacceptable in all forms. It has severe untold psychological effects on the victim and creates negative productivity in the system. Therefore, everyone in the healthcare sector should condemn sexual harassment and work towards a safe and healthy environment for all staff and clients alike.

Preventive strategies for institutions laid down by the ILO include making a commitment and policy against sexual harassment, implementing actions to ensure that sexual harassment does not take place within the institution, creating awareness among staff and patients (workshops, publishing in notice boards, etc.), and addressing the issue (producing clear guidelines to the management and HR departments, encourage reporting and redress mechanisms). (1)

The right to work with dignity is a fundamental human right.

Dr Angela Arulpragasam Anthony
Chief Editor Batticaloa Medical Journal
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Original Paper

A Study on Antenatal Clinic Referrals of Medical Officer of Health Office, Navithanveli.

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Abstract:

Introduction: Timely referrals are crucial for improving maternal and child health, as delays can have adverse consequences. Understanding the factors affecting referrals is essential for improvement.

Objectives: To assess the timeliness and outcomes of referrals from antenatal clinics, and to identify the factors influencing the outcomes.

Methodology: This retrospective descriptive study reviewed data from 39 referrals made in the last quarter of 2023 at the Medical Officer of Health Office Navithanveli, Sri Lanka. Data sources included patient records, referral books, and semi-structured interviews with healthcare providers.

Results:

- **Referral timing:** Most referrals (66.7%) were made in the third trimester.
- **Patient characteristics:** The majority of mothers were aged 20-35 years, studied up to Ordinary Level, and were accompanied by a person to the clinic.
- **Referral reasons:** The most common reasons were anemia (28.2 %), high blood pressure and fundal height issues.
- **Referral outcomes:** Two-thirds of mothers reached the hospital on time. Others went to private care, delayed seeking care, or refused referral.
- **Reasons for delay:** Transport/financial barriers (38.4%) and lack of a companion (23%) were the main reasons for delay or not seeking care.

Conclusion: While most referrals were timely, there is room for improvement. Transport and financial problems, and lack of a companion were key barriers.

Keywords: Maternal and Child Health, Public Health Midwife, Medical Officer of Health, Clinical Audit, referral.

Introduction, Background

Sri Lanka has a long history of providing maternal healthcare. Hospitals of indigenous medicine and maternity homes existed as early as the 4th century AD (1). In 1902, a dedicated maternal and child health department was established due to high infant mortality rates. Midwives and health visitors were appointed to deliver essential maternal services. The first antenatal clinic was established in 1921, following international trends (1).

The Sri Lankan government offers free maternal care to all pregnant women. Antenatal care is provided at Maternal and Child Health (MCH) clinics and through home visits. Pregnant women are registered for early care, and a detailed “Pregnancy Record” is maintained. High-risk mothers receive special attention, and a system exists for referring them for specialized care (1).

Timely follow-up of referrals to secondary or tertiary healthcare centers is crucial for optimal maternal and newborn health outcomes. This clinical audit assessed the timeliness of follow-up and factors influencing

the outcome of referrals made by the Medical Officer of Health (MOH) during antenatal clinics at MOH Navithanveli in the last quarter of 2023.

Timely follow-up of referrals in local/secondary/tertiary healthcare centres is crucial for ensuring optimal maternal and newborn health outcomes. This clinical audit aimed to assess the timeliness of follow-up and determinants of outcome of referrals made by the Medical Officer of Health (MOH) during antenatal clinics in MOH Navithanveli in last quarter of 2023.

Justification

Timely referral follow-up is essential for ensuring optimal maternal and newborn health outcomes. Studies have shown that efficient referral systems significantly reduce maternal mortality rates (3). A well-functioning health system ensures patients receive appropriate care at primary levels and are promptly referred for advanced care as and when needed (2).

Evidence suggests that timely referral to appropriate healthcare facilities is a key indicator of a functional health system (4, 5). Efficient referral processes can lead to substantial reductions in neonatal deaths, stillbirths, and maternal mortality (3, 6). High-quality referrals are particularly critical in low- and middle-income countries (LMICs) to prevent severe maternal morbidity (7, 8).

This audit identified potential gaps in the referral process, such as inadequate communication, lack of support services, or insufficient follow-up. This information can be used to develop targeted interventions to address these shortcomings and improve the overall quality of care provided. The audit will provide empirical data on referral practices and outcomes, enabling data-driven decision-making. The findings can inform policy changes, resource allocation, and the implementation of interventions tailored to the specific needs of the population served by MOH Navithanveli

Standards:

All referrals from antenatal clinics of MOH should reach a hospital for admission/specialist opinion on time. Reaching on time means that the pregnant woman arrived at the higher-level facility within a reasonable timeframe from the date of referral. This timeframe is typically determined by the urgency of the referral and the specific medical condition. For example, a referral

for a high-risk pregnancy or a suspected emergency would require a more immediate arrival.

Study Design: Retrospective descriptive study with a mixed-methods approach (quantitative and qualitative data collection).

Study Settings: All six antenatal clinics in MOH Navithanveli

Study Period: Last quarter of 2023 (from September to December 2023)

Study Population: All pregnant women who were referred for specialized care were enrolled

Exclusion Criteria:

- Routine (dating scan) referrals
- Mothers who are temporarily residing in the area

Sampling: Sampling was not done; total enumeration was followed. The total number of referrals for specialized care was 39.

Data collection: Data were collected from the following sources.

- Medical records [H 512] and referral books prepared by MOH Navithanveli and maintained by Public Health Midwives (PHM)] from antenatal clinics to identify all referrals made to local hospital/secondary/tertiary care centers during the last quarter of 2023.
- Obtained records of PHM follow-up activities including:
 - Date of referral and date of last home visit before and after referral
 - Details of referred mothers (age, period of gestation, distance from hospital, accompanying persons).
 - Documentation of appointment booking, transportation assistance, or other follow-up actions.
 - Information on the completion of referral (e.g., admitted on time, attending a specialist appointment, receiving necessary treatment).
- Conducted semi-structured interviews with a sample of referred mothers and PHMs to gather

insights into their experiences and perspectives on the referral and follow-up process and reasons for any missed/delayed hospital appointments or incomplete follow-up.

Analysis: All data were summarized through a questionnaire created by using Google Forms

Results:

The total number of specialist referrals done in the last quarter of 2023 was 39. Of these, 23% were in their first trimester, 30.8% in their second trimester, and 43.2% in the third trimester. (Figure 1)

Most women (26) were between 20 and 35 years, 3 were less than 20 years and 10 were older than 35 years. (Figure 2).

Forty-three per cent women had studied up to grade five, 41% up to GCE Ordinary Level, and 15.4% studied up to GCE Advanced Level or more. Most women came to the clinic with their husbands (43.6%) or another family member (43.4%) and 12.8% came to the clinic alone.

The reasons for referral included anaemia (28.2 %), high blood pressure (12.8%), issues with fundal height (25.6%), a cardiac murmur or cardiovascular disease (12.8), and other causes (20.6%). (Figure 3)

When considering the outcome of the referrals, 66.7% of the referred women reached the hospital on time, while 17.9% went to the private sector to be seen by a VOG/other specialist, 5.1% reached the hospital but were late, 2.6% went to a local GP and 7.7% refused and stayed at home. (Figure 4)

The reasons for not attending to the referral were 7.8% not knowing the importance (7.8%), transport and financial issues (38.4 %), unavailability of husband or suitable companion (23%), poor decision making (15.4%) and due to past bad experience in the hospital (15.4%).

Figure 1. Distribution of referrals by trimester

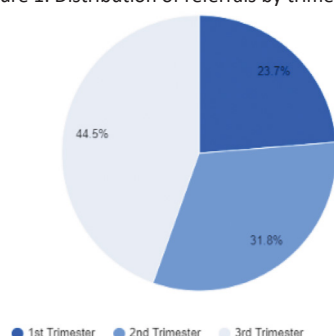


Figure 2. Distribution of referrals by age

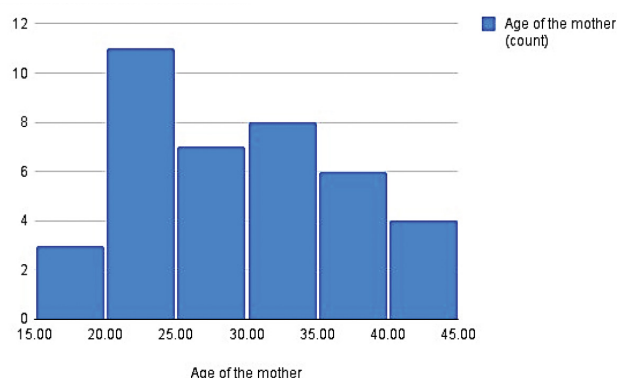


Figure 3. Distribution of reasons for referral

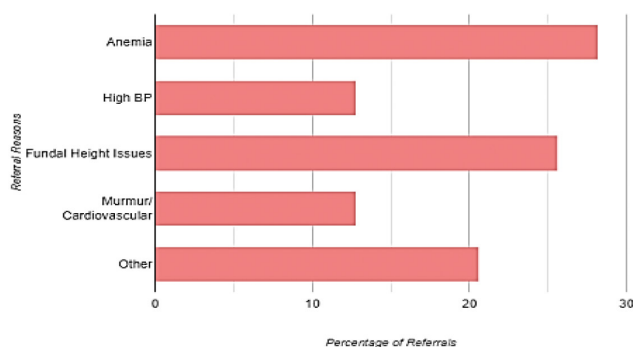


Figure 4. Distribution of outcome of referral

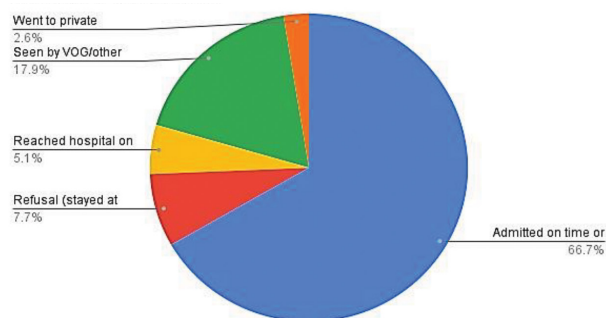
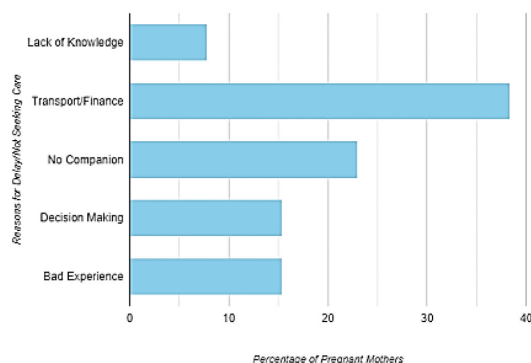


Figure 5. Distribution of reasons for delay/ not seeking care after referral



Discussion of Audit Results

This clinical audit at MOH Navithanveli antenatal clinic aimed to assess the timeliness of referral follow-up and identify influencing factors. The findings provide valuable insights.

A higher proportion (43.2%) occurred in the third trimester, potentially reflecting the identification of complications as pregnancy progresses. The age distribution (Figure 2) suggests a focus on a broad range of reproductive ages. Educational attainment shows a significant portion (43.6%) with only primary education, highlighting the potential need for tailored communication strategies.

Good social support is seen in this study, as a decent proportion attended with their husbands or family members, indicating potential support systems.

The most frequent referral diagnoses (Figure 3) were anemia, fundal height issues, and miscellaneous. This reflects a variety of potential complications being addressed. Encouragingly, a majority (66.7%) followed up on referrals promptly.

A significant proportion (17.9%) opted for private care and 7.7% refused altogether (Figure 4). Reasons for delays/not seeking care highlight challenges like transportation, financial constraints, lack of accompaniment, decision-making processes, and negative past experiences.

The possible reasons for the lack of follow-up could be, a lack of awareness of the referral or its importance by the mother, difficulty accessing specialist care due to transportation, financial constraints, or lack of childcare for other children, and inadequate communication or follow-up by PHMs.

Conclusion

While most referrals were made in the third trimester and a majority of mothers followed up promptly, there were challenges. Barriers like lack of awareness, transportation issues, and inadequate accompaniment led to delays or refusal of care. The small sample size, retrospective design, and limited timeframe restrict generalizability. Moving forward, a multifaceted approach is needed. Improved communication, stronger follow-up strategies, addressing logistical and financial barriers, and collaboration with stakeholders can significantly enhance referral timeliness and ultimately improve maternal and child health outcomes

Limitations of this Clinical Audit

The clinical audit of referral follow-up practices at MOH Navithanveli provides valuable insights, but it is limited by its retrospective design, small sample size, short timeframe, and focus solely on follow-up without assessing the quality of care received at higher-level facilities

Recommendations and Implications:

The audit recommends a multifaceted approach to improve referral timeliness and outcomes in antenatal clinics. This includes strengthening communication, enhancing follow-up strategies, addressing logistical and financial barriers, improving documentation, providing training and support to PHMs, and building partnerships with secondary/tertiary care centers. Engaging stakeholders like mother support groups can also be beneficial in providing additional support to mothers and removing barriers to accessing care

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Author contributions

SILMY M B M conceived the original study idea and contributed to audit designing. SILMY M. B. M. and Hilmy M.A.M. reviewed the collected data for analysis. SILMY M. B. M. and ASHMAH A. F. F. contributed to the data analysis and drafted the manuscript. All the authors revised and approved the final manuscript.

Conflicts of interest: There are no conflicts of interest. All the authors declare that they have no competing interests.

Acknowledgments: We acknowledge the participants who contributed to the study.

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Original Paper

Students' Perception on Collaborative Learning Activity in Healthcare Education

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Abstract:

Introduction: Collaborative Learning is an active learning strategy in which students work in small groups to optimize their teaching-learning activities. It encourages the students to help and support each other by working as a team. Collaborative Learning is important in Health Care education since health professionals work as a team to solve complex problems and serve their community.

Objective

This study assessed the students' perception of Collaborative Learning in the Faculty of Health-Care Sciences, Eastern University, Sri Lanka.

Methods

A total of 52 Medical undergraduates and 23 BSc Hons (Nursing) undergraduates participated in this cross-sectional descriptive study following a small group discussion. A self-administered questionnaire was used to collect the data by using Google Forms. The questionnaire consisted of five perception statements with a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Results

The majority of the participants preferred collaborative learning over traditional teaching methods. Almost 60% of medical and nursing undergraduates strongly agreed that Collaborative Learning improves their active participation in the classroom. While 98.1% of medical undergraduates perceived that they could build strong relationships with their peers while attending Collaborative Learning, the majority of the BSc Hons (Nursing) undergraduates (>90%) strongly agreed or agreed that Collaborative Learning helps to sustain their attention throughout the lesson.

Conclusion

This study revealed that the undergraduates of the Faculty of Health-Care Sciences, Eastern University, Sri Lanka have a positive perception of Collaborative Learning.

Keywords: Active Learning, Collaborative Learning, medical undergraduates, nursing undergraduates, Teaching-Learning method

Introduction

Traditional learning to active learning method

Higher education is moving towards student-centered learning from teacher-centered learning, to enhance the active involvement of the students in the teaching-learning process (1). Active learning is where students engage in activities that involve gathering information,

thinking, and problem-solving. This focuses on reflective, integrative learning and higher-order thinking (2). Some examples of active learning methods that are currently practiced by medical students are self-directed learning, problem-based learning, case-based learning, team-based learning, flipped classrooms and portfolios (3). Collaborative Learning (CL) is an active learning strategy where students work in small

groups to optimize their teaching-learning activities. As a student-centered learning approach and in active learning methods CL is the most constructive learning strategy (2). It encourages students to help and support each other by working as a team. All individuals in a group get an idea of their knowledge gap, learning objectives, how to seek useful information, and whether they have met those objectives or not (4). Students who are shy to ask questions and those who are anxious to work with students with good grades benefit in CL (5). The facilitators give necessary guidance, like asking questions to assess students' understanding, clear their misconceptions, ensure the active participation of all group members, listen and encourage their ideas (3). The number of articles published related to CL is increasing, proving the growing interest in CL (6). Over the years, research has shown that CL can facilitate academic and social outcomes (7). CL has three bases: social interdependence, behavioral learning, and cognitive learning (8). Science is a difficult subject that needs a deep-learning approach to understand concepts and complex processes. In CL students interact by explaining and questioning; CL sufficiently increases deep learning where students have high-quality social interaction like discussing contradictory information (9). Literature says that early experiences of group work influence future group work activities and students with low academic performances have been found to gain more from group work (5). The following factors are needed for effective CL: social interaction between students, suitable group composition – small groups (three to five students) with mixed ability, equal participation, heterogeneity, and positive interdependence (9).

Collaborative Learning in Healthcare Education

CL is important in healthcare education since health professionals work as a team to solve complex problems. Medical students and healthcare staff are lifetime learners. A physician's knowledge will reduce with time and evolve as science advances. Therefore, medical students must gain skills associated with lifelong learning. It should be developed early in their career and continuously practiced (4). The several benefits of CL include, involvement of students in an active learning process, ability to utilize a variety of assessments, improving classroom results, deep learning, organization, time management, teamwork and efficient use of finite teaching resources (5, 10). CL expands critical thinking skills, social interaction skills, communication skills, students' problem-

solving techniques and transferable skills, (5,10). Institute of Medicine, Quality and Safety Education for Nurses, Interprofessional Education Collaborative and American Association of Colleges of Nursing Essentials had identified the ability to work in groups and communicate with professionals are critical patient safety core competencies (8). Doctors are known to have a lower appreciation for interprofessional communication and collaboration as compared to others in the health field (4). Higher education institutions and instructors are the main players in CL (2). When the learner is involved in any active learning strategies faculty and peers need to play an important role in guiding and promoting it by offering feedback (4). Empathy is another gold standard personal trait for healthcare professionals. The base of empathy starts with listening and caring for others which can be started during university life by following CL. However, grouping students alone will not result in this cooperation. They need positive interdependence, individual accountability, face-to-face interaction, appropriate social skills, and periodic processing to improve group effectiveness (5). CL is considered an excellent option for learning in the pre-clinical phase. As Sri Lanka is a multi-religious and multi-ethnic country, heterogeneous grouping is important to increase the success of CL, peer interactions and peer tutoring (11).

Faculty of Health-Care Sciences (FHCS)

Our study on CL was applied in the Faculty of Health-Care Sciences (FHCS), Eastern University, Sri Lanka (EUSL). Presently FHCS conducts two bachelor's degree programs namely MBBS and BSc Hons (Nursing). The main feature of the FHCS curricula is the integration achieved through a module-system approach and Problem-Based Learning. It promotes CL among undergraduates. Studies proved that incorporating CL during the early stages of undergraduate medical education is an effective way of teaching (3). As the students are the important stakeholders of an educational institute, it is essential to assess their perception of every teaching-learning activity to assess its effectiveness. Therefore, this study aimed to assess the students' perception of CL.

Materials and Methods:

This descriptive cross-sectional study was conducted at the Faculty of Health-Care Sciences (FHCS), Eastern University, Sri Lanka (EUSL). A total number of 52 Medical undergraduates and 23 BSc Hons (Nursing)

undergraduates were included in this study. Both groups of undergraduates participated in different CL activities. Students were divided into small groups of five students for the activity.

Before the collaborative learning activity, topics from the Nursing Education module for third-year nursing students and the General Pathology and Neoplasia module for third-year MBBS students were allocated for each group based on the intended learning outcomes (ILOs). Students were requested to learn the topics before coming for the session. On the day of the session, students were allowed to discuss the allocated topics in their respective groups. These group discussions were facilitated by the lecturers. After the discussion, each group was requested to present their topic in front of the class. At the end of the group activity, the audience was able to clarify their doubts and misconceptions with the help of the facilitator.

After the collaborative learning activity, a self-administered questionnaire, developed by the investigators, was shared in a Google link to collect students' perceptions about the collaborative activity in which they had participated. Data was collected and analyzed separately for Medical and BSc Hons (Nursing) undergraduates. The questionnaire consisted of five perception statements with a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

All the data was recorded on a personal computer. Data analysis was carried out using SPSS version 22. Descriptive statistics were used to describe the students' perceptions.

Results:

The evaluation indicated that the CL activity was well received by the participants. It was observed that both Medical and BSc Hons (Nursing) undergraduates enjoyed and actively participated in the CL activity. Figure 1.

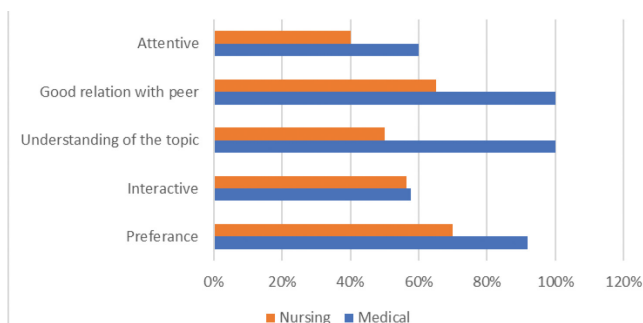


Figure 1. Students' perception of CL in different aspects.

About 92% of medical undergraduates preferred the collaborative learning method over the traditional lecturing method. When compared to the medical undergraduates, nearly 70% of BSc Hons (Nursing) undergraduates preferred to have CL in the future. Thirteen per cent of the nursing students negatively perceived the CL and preferred to stick on to the traditional method of teaching.

Among the medical students, 57.7% of the students strongly agreed and 32.7% of the students agreed that the CL activity was well interactive. Almost all medical undergraduates (51) expressed that they were able to understand the topic discussed during the CL activity. The same number of participants stated the CL activity helped them to build a good relationship with their peers. More than half of the medical students (35) declared that CL activity makes them attentive during the teaching-learning hours.

Even though the nursing undergraduates also positively perceived the CL activity, when compared to the medical undergraduates, the percentage seems to be low. Among the 23 nursing undergraduates, nearly only half of the students agreed that they could understand the facts which were discussed during CL activity hours. Fifty-six per cent of the students stated that the CL activity was very interactive. Sixty-five per cent of the nursing students perceived CL is an effective way to promote a good relationship among them. However, less than half of the nursing students agreed that CL strategy helped them to sustain their attention.

Discussion:

Based on these results, students who have participated in the CL activity expressed positive perception and acceptance. Similar positive perceptions of CL were obtained in Pakistan, where students expressed huge satisfaction in the acceptance and effectiveness of active learning strategies (3). Another study (12) reported that a combination of lectures and active learning strategies like CL were viewed positively by the students.

Like the two sides of a coin, negative perceptions of CL also were expressed by some studies. A study done in undergraduate nursing programs (13) explained that there are no significant changes in knowledge demonstrated on teacher-constructed examinations, no negative impact on learning was detected when comparing CL and traditional learning method and no significant differences in the examination pass rate

based on teaching method. Further additional time was needed to study for examinations when the work was divided among groups during CL in class. Similar results to our study were seen in a study done in the southwestern United States (14) students preferred CL because they could build a good understanding of study material and could hear others' perspectives. Other than the above factors lack of digital infrastructure, low-quality internet networks, lack of training for educators, inadequate practicum equipment and curricula that are not related to required job skills were found as disadvantages of CL in a systemic review in 2023(6). Pseudo-learning groups are the main drawback for CL where free riders, logistical issues, or interpersonal conflicts will create an extra workload for actively participating students (9). Teachers also become frustrated resulting from a lack of synthesis and some students benefit from other students' work (9). A recent analysis of the academic performance of medical students on a large scale showed no difference in outcome with existing teaching strategies. (1). Therefore, gradual changes are advised for active learning strategies than abrupt change from the traditional lecturing method to active learning. Clear instruction should be provided before beginning an active learning session. In these conditions, we can start it from "Lecture Plus" method which would be feasible at all stages of medical education and does not require extensive faculty training workshops (1). This can act as a turning point where some studies reflect that teacher-centered learning is best for hard subjects like chemistry, medicine, and engineering and student-centered learning is for soft subjects like humanities subjects (history and social sciences). Asian students may prefer a teacher-centered approach than the west (11). Combining two or more active learning strategies gives high performance. A study done among Prelicensure Nursing revealed that combining CL with a flipped classroom increased the scores of the students in examinations (8).

In CL we are mainly assessing collaborative performance and it might not be the same as assessing individual academic learning. A descriptive study (7) is supportive of this statement, where students did not like to be involved in CL activities since everyone in their group got the same grade without any effort. Relationships between CL and factors like student-faculty interaction, teaching quality, relatedness, higher-order thinking and reflective and integrative learning were analyzed in (2). Similarity and friendship also affect the effectiveness of CL. Friends within a

group try to dominate the CL and make other members feel left out. Our students expressed that they were active throughout the session. The active participation of university students in CL depends on their grades; higher grades will give high CL participation (9).

Gender preference is analyzed in (5) where females were found to have less preference and skill development in CL than males. Whatever it is CL should not be ignored or discouraged because will facilitate content-related knowledge construction processes (1).

Conclusion:

The general outcome of this study revealed that the undergraduates of the Faculty of Health-Care Sciences, Eastern University, Sri Lanka have a positive perception of Collaborative Learning. Medical and BSc Hons (Nursing) undergraduates have similar perceptions towards CL. Creating a productive, caring, and supportive generation of healthcare professionals is the goal of healthcare education. Active learning tactics like collaborative learning should be included and promoted in undergraduate teaching methods to improve their relationship with peers and gain a clear understanding of the session. These different kinds of active learning strategies should be evaluated periodically to ensure efficiency. Teachers' and instructors' perceptions should also be assessed to ensure the prompt delivery of the curriculum. This study focused on only one batch of medical and nursing students from the Faculty of Health-Care Sciences, Eastern University, Sri Lanka. Therefore, the overall expectations might vary in other batches including old and upcoming batches. Gender preference and teachers' preference were not discussed in this study.

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Original Paper

Health-Related Quality of Life in Oral Cancer: A Study at Peradeniya Dental (Teaching) Hospital

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Abstract:

Introduction: Introduction: Health-related quality of life (HRQoL) is gaining paramount importance as a valuable outcome measure in oral cancer. This study aimed to assess the HRQoL of oral cancer patients in the Dental (Teaching) Hospital, Peradeniya.

Methods: A cross-sectional survey was conducted among 74 oral cancer patients selected by convenience sampling. HRQoL was measured with Sinhala and Tamil versions of the EQ-5D-3L tool and the demographic and disease-related data were collected using an interviewer-administered data collection form. HRQoL was categorized into “poor” and “good”. The significance level was set as $p \leq 0.05$.

Results: The overall mean utility score of the sample was 0.65. The majority of the participants (61%) had “good” HRQoL. Sixty-five per cent of the patients reported having some/extreme problems in the health dimension of pain/discomfort, followed by mobility (35%), self-care (38%), usual activities (50%), and anxiety/depression (33%). Significant associations were found between HRQoL and residential area ($p=0.019$), monthly income ($p=0.001$), and comorbidities ($p<0.001$). The mean overall self-rated health status of the patients (on the day of the survey) was 78.65.

Conclusions: HRQoL and the self-rated health status of oral cancer patients in Dental (Teaching) Hospital were found to be “good”.

Keywords: EQ-5D-3L, Health-related quality of life, Oral cancer

1. Introduction,

Cancer causes major morbidity and mortality worldwide. In low-income countries, it's an emerging burden to the health system (1). Cancer of the oral cavity and anatomical sites is defined as oral cancer. In recent times, the incidence of oral cancers has increased (2). Oral cancer is the most common cancer of the head and neck and the sixth most common cancer among systemic cancers (3). Global estimates indicate that the incidence is around 275,000 for oral and 130,300 for pharyngeal cancers every year (4). The anatomical distribution of oral cancers is approximately 32% in the buccal mucosa, 22% in the tongue, 11% in the lower lip, 11% in the palate, 8% in the vestibule, 5% in the alveolus, 5% in the floor of the mouth (FOM), and 3% in the gingiva (5).

According to the National Cancer Control Programme in Sri Lanka, oral cancer is the most common cancer among males and the eighth most common cancer among females (6). The causative factors of oral cancers are betel chewing, smoking, snuff dipping, areca nut chewing, and alcohol intake. These risk factors are associated with the lifestyle of the people, thus it is easy to prevent oral cancer by avoiding these habits (7). However, some etiological factors such as betel and areca nut chewing, are associated with cultural practices in Sri Lanka and pose a major challenge in avoidance.

The definition of Health-Related Quality of Life (HRQoL) is a multidimensional concept that describes many aspects of quality of life, including self-perceived

well-being and functionality, relating specifically to a person's health (8). HRQoL is a well-known health condition representing individuals' beliefs, experiences, and expectations in their daily lives (9). HRQoL includes not only physical health but also mental and social well-being(10). In Sri Lanka, the state provides free curative services and various cancer treatments. Maintaining the HRQoL for patients is crucial, especially for those with serious co-morbidities and poorly tolerated surgeries. Palliative care is essential to improve HRQoL in advanced stages (11). Many trained healthcare professionals work towards the prevention and control of cancers in Sri Lanka(12).

When compared to other cancers, oral cancer patients have the worst indices for quality of life and have severe complications on their HRQoL like dysphagia, speech problems, saliva secretion problems, and problems in appearance(1). For the continuous monitoring of the function and well-being of the patient and the success of the therapeutic procedure, it is important to assess the quality of the life of patients(3). It is also vital to assess the impact of oral conditions in day-to-day life(1). There will be an impairment of body image (appearance) and physical functions like breathing, speaking, swallowing, eating problems, limited mouth opening, chewing, and saliva secretion problems in patients with oral cancers(2).

Therefore, the determination of HRQoL will help to improve their quality of life and the effectiveness of treatments in the field of oral medicine in the future. It is very important to assess the HRQoL of patients who are admitted to the hospital for treatment as HRQoL helps to monitor the progression of treatment and the functional well-being of patients. In addition, measuring HRQoL can help determine the burden of preventable disease, injuries, and disabilities, and can provide valuable new insights into the relationships between HRQoL and risk factors. The aim of this study was to assess the HRQoL of oral cancer patients in Dental (Teaching) Hospital, Peradeniya, Sri Lanka.

2. Methods

Study Design

This was a descriptive cross-sectional study

Study area/population

All inward patients and clinic oral cancer patients in Dental Hospital (Teaching), Peradeniya.

Sampling Methods and Sample Selection

The Sample size for the study was calculated by using Taro Yamane (Yamane, 1973) formula with a 95% confidence level.

$$n = \frac{N}{1 + N(e)^2}$$

n = sample size

N = population size

e = sampling error assumed as 0.05

$$\begin{aligned} n &= \frac{120}{1 + 120(0.05)^2} \\ &= 92 \end{aligned}$$

Using Taro Yamane's formulae, a sample size of 92 is derived for the study. This sample size was achieved using a convenience sampling method

Study instruments and material

The self-completion Sinhala and Tamil versions of the EQ-5D-3L questionnaire were used to collect data. It is a generic instrument and one of the most widely used tools for measuring HRQoL. EQ-5D-3L consists of five dimensions of generic HRQoL (mobility, self-care, usual activities, pain/discomfort, and anxiety/depression) with three answer possibilities per dimension (severe problems, some problems, no problems). This scoring function is determined by the general population by valuing the possible health states (each possible combination of answers represents a health state). Scoring functions vary among countries depending on the preferences of that particular population. These scoring functions for countries are called tariffs. Health utilities range from a negative score (health state worse than death, severe problems in all five dimensions), through 0 (death) to 1 (full health, no problems in all dimensions)(13).

Next to the five questions, a visual analogue scale (VAS) is included in the EQ-5D that ranges from 0 (worst imaginable health state) to 100 (best imaginable health state). The VAS measures the patients' self-rated HRQoL (patients' perspective)(13). In addition, an interviewer-administered data collection form was used to collect demographic and disease-related information.

Survey administration

Data was collected from 1st February 2020 to 25th March 2020, and the questionnaire was given to oral cancer patients in Dental Hospital (Teaching), Peradeniya. Informed written consent was obtained from every participant after explaining the purpose, benefits, risks and data collection procedure to the patients. After obtaining the consent, the researcher gave a brief introduction to EQ-5D-3L and gave relevant instructions to fill out the tool. The privacy and confidentiality of the participant's information were maintained throughout the study.

Initially, the feasibility of the study was assessed using a pretest, which was conducted on 10 patients with oral cancers. Then the actual study was conducted after analyzing the data of the pretest study.

Ethical consideration

The ethical clearance was obtained from the Ethics Review Committee of the Faculty of Dental Sciences, University of Peradeniya. The permission to collect data from the patients was obtained from the Deputy Director of the Dental (Teaching) Hospital, Peradeniya. Informed written consent was obtained from the patients before the data collection. Privacy and confidentiality were maintained and participants were assured of the confidentiality of data. Participants were informed about their right to refuse to participate in the study and withdraw from the study at any time without any impact on their routine management. This study didn't cause any physical or psychological harm to the participants in any way.

Statistical analysis

The collected data was entered into a Microsoft Excel spreadsheet and analyzed using SPSS 22. The HRQoL was categorized into two groups: poor and good. Good quality of life was defined as 3 or more dimensions having a score of 1 and poor quality of life was defined as 2 or fewer dimensions having a score 1(14)(15). The demographic and disease-related information were described in terms of descriptive statistics. The Chi-square test was used to investigate the associations between HRQoL and the demographic and disease-related variables.

3. Results

3.1. Socio-demographic profile of the study participants.

This study included 74 participants. Table 1 outlines the participants' characteristics; The majority were above 50 years old (85%), male (90.5%), Sinhalese (81%), and speaking in Sinhala language (81%). Nearly half of the respondents were from rural areas (57%), had an education level up to primary level (49%), and had income less than Rs. 25000 (57%).

Table 1: Demographic characteristics of study participants

Demographic Characteristics	ALL(N=74) n (%)
Age (years)	
<50	11(15)
>50	63(85)
Gender	
Male	67(90.5%)
female	7(9.5%)
Ethnicity	
Sinhala	60(81%)
Tamil	10(13.5%)
Muslim	4(5.5%)
Speaking Language	
Sinhala	60(81%)
Tamil	14(19%)
Place of residence	
Urban	17(23%)
Semi-urban	15(20%)
Rural	42(57%)
Educational Status	
Never attend	12(16%)
Primary level	36(49%)
Ordinary level	23(31%)
Advanced level	2(3%)
Diploma/Degree	1(1%)
Monthly income	
Less than 25000	42(57%)
25000-50000	12(16%)
No income	20(27%)

3.2. Disease-related characteristics of the patients (n=74)

The participants were diagnosed with cancer: In the floor of the mouth (42%), Inner cheek (32%), hard palate (4%), lip (10%), tongue (8%), and other areas of the mouth (4%).

The majority (54%) of the participants had at least one type of comorbidity. Among them, 22% had Diabetes and Hypertension whereas 9% of the sample had diabetes, hypertension, and arthritis. Further, 37% of the patients were identified with more than one illness (Figure 1). The participants are having the habits of smoking (62%), Betel chewing (76%), and drinking alcohol (57%).

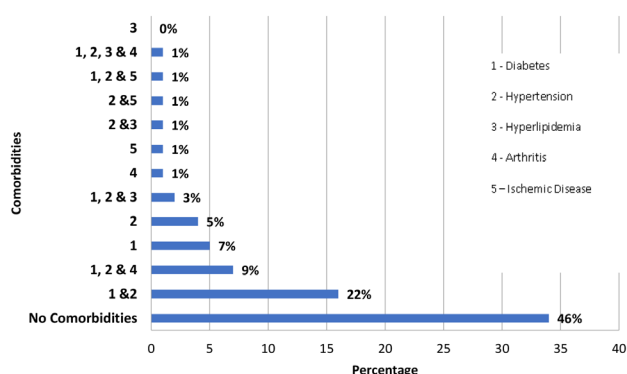


Figure 1: Comorbidities of oral cancer patients

3.3. Health-related quality of life of oral cancer patients

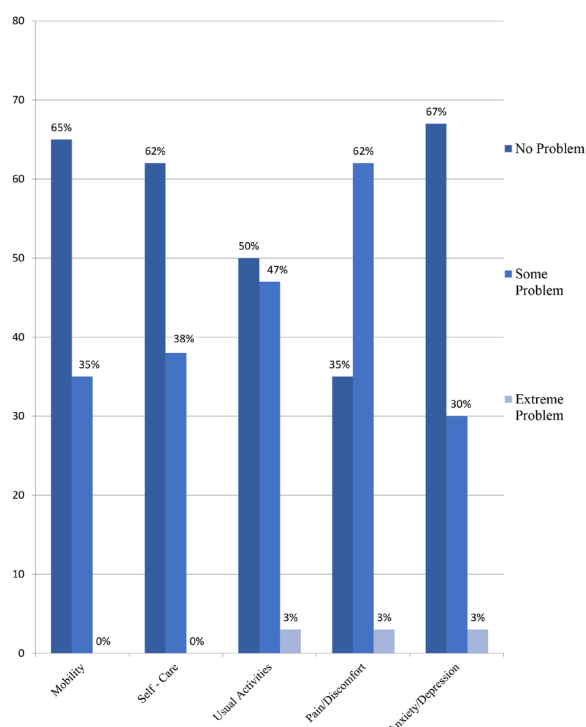


Figure 2: EQ-5D-3L percentages reported by dimension and level

The overall mean utility score of the sample was 0.65 (SD+0.25). The highest mean EQ-5D (0.780) was observed in the age group of 31-40 years whereas the lowest EQ-5D mean (0.490) was reported in the age group of 71-80 years. The majority of the participants (61%) had good HRQoL while only 39% reported poor HRQoL.

Most participants reported no problem in all dimensions (mobility - 65%; self-care -62%; usual activities - 50%; anxiety/depression - 67%) except pain/discomfort (35%). Sixty-two percent of the patients reported having some problems in the health dimension of pain/discomfort, followed by mobility (35%), self-care (38%), usual activities (47%) and anxiety/depression (30%). Only 3% of the patients in all three dimensions of usual activities, pain/discomfort and anxiety/depression reported having extreme problems. The dimension for which the lowest proportion of participants reported some/extreme problems (33%) was anxiety/depression (Figure 2).

3.4. Overall self-rated health status by EQ-5D-3L VAS

The mean overall self-rated health status of the patients (on the day of the survey) was 78.65 (SD+8.96). No patients reported their self-evaluated health status to be “bad” as no one was found between 00% – 50%. Meanwhile, all the patients (n=74) responded that they were in “good” health status, falling above 50% of EQ-5D-3LVAS (Figure 3).

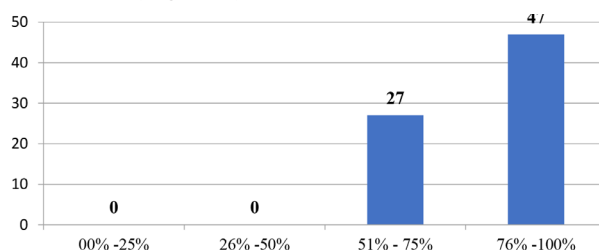


Figure 3: Overall self-related health status of the patients

3.5 Association between HRQoL and the demographic and disease-related variables

Pearson chi-square test results showed that the HRQoL is significantly associated with the residential area ($X^2 = 7.957$, $p=0.019$) and monthly income ($X^2 = 19.510$, $p<0.001$) at the significance level of $p<0.005$ (Table 02). Moreover, the association between HRQoL and the presence of comorbidities ($X^2 = 8.077$, $p=0.004$) was highly significant at the significance level of $p<0.005$ (Table 03).

Table 2: Association between demographic characteristics of oral cancer patients and health-related quality of life(N=74).

Association	Chi-Square Value	P-Value
Age and HRQoL	1.318	0.725
Gender and HRQoL	0.758	0.384
Ethnicity and HRQoL	3.714	0.156
Residential area and HRQoL	7.957	0.019*
Marital status and HRQoL	1.172	0.557
Education level and HRQoL	1.635	0.652
Monthly income and HRQoL	19.510	<0.001*

P-value from Pearson's Chi-Square Test

**Table 3:
Association between disease-related variables of oral cancer patients and health-related quality of life (n=74).**

Association	Chi Square Value	P-Value
Site of primary cancer and HRQoL	2.445	0.294
Comorbidities and HRQoL	8.077	0.004*
Smoking and HRQoL	0.938	0.333
Betel chewing and HRQoL	0.342	0.559
Alcohol and HRQoL	0.049	0.825

P-value from Pearson's Chi-Square Test

Discussion

This study was conducted in Peradeniya Dental (Teaching) Hospital, and 74 patients with oral cancers participated. The majority of the sample was males (89%) and this high proportion of males can be described in terms of the high prevalence of oral cancers among males in Sri Lanka. There was a broad representation of ages which made the sample more representative, but also more variable. More than half of the patients were from rural areas of the country whereas the other patients were presented from the semi-urban and urban areas of the country. This may be because of the comparatively high consumption of betel, alcohol, tobacco and smoking ingredients by the people residing in rural areas than the urban people.

The high prevalence of cancers in the floor of the mouth (42%) and inner cheek (32%) could be linked to risk factors like betel chewing and smoking, which are prevalent among the participants. The fact that 54% of participants had at least one comorbidity indicates a

significant burden of additional health issues alongside cancer. With 37% of patients having more than one illness, managing cancer becomes more complex.

Smoking (62%), betel chewing (76%), and alcohol consumption (57%) are significantly high among the participants. The presence of comorbidities and risky habits necessitates a holistic approach to patient care, addressing not only cancer but also other chronic conditions and lifestyle factors. Multidisciplinary teams including oncologists, primary care physicians, and behavioral health specialists can provide comprehensive care. Preventive measures, such as smoking cessation programs and education about the risks of betel chewing and alcohol consumption, could be beneficial. Supportive care, including nutritional support and physical therapy, could help manage the impacts of multiple health issues on patients' quality of life.

The response rate of the study was 98.67%. The mean utility score (health index) of the sample was 0.65 indicating that, on average, patients' HRQoL is moderate, with some degree of problems in various dimensions. This value is a little lower than the mean score of the study which was conducted by Rogers et al.(16) which reported a value of 0.75. The highest mean EQ-5D (0.780) was observed in the age group of 31-40 years whereas the lowest EQ-5D mean (0.490) was reported in the age group of 71-80 years. This suggests that younger patients tend to have better HRQoL compared to older patients, potentially due to better overall health, quicker recovery, and fewer comorbidities. This finding is similar to previous reports which showed that HRQOL declined with age(14).

The majority of the participants (61%) had "good" HRQoL while only 39% reported "poor" HRQoL. This is a positive finding which indicates the quality of their life following surgery and other treatment options. This may be due to various factors such as the quality of available healthcare facilities, level of satisfaction with the care and early detection of the neoplasm(17).

Over one-third of participants reported problems with mobility (35%) and self-care (38%), indicating that oral cancer and its treatments can significantly impact basic physical functions. Half of the participants reported problems with performing usual activities, which can greatly affect their daily lives and overall well-being. With 65% of participants experiencing pain or discomfort, pain management emerges as a critical area of concern. Effective pain management strategies

are essential to improve patients' quality of life, including pharmacological and non-pharmacological interventions.

One-third of the participants reported anxiety or depression, highlighting the psychological impact of oral cancer. This finding indicates a need for mental health support, including counseling and therapy. These results are approximately in line with the findings of the study by Rogers et al.(16). The majority of participants reported no problems in most dimensions and 15% of participants reported no problems at all, suggesting that the majority are dealing with significant challenges in multiple dimensions of HRQoL.

The mean overall self-rated health status of the patients (on the day of the survey) was 78.65 indicating that patients felt they were in good health despite their condition, which is a promising sign of their resilience and overall well-being. This result is higher than the study by Rogers et al(16) and lower than the study by Nolan et al(18). The absence of ratings below 50% indicates that none of the patients felt their health was bad on the survey day. This could reflect effective symptom management, supportive care, or psychological resilience among the patients. The high VAS score indicates that their overall health status is good on the day of the survey. Because, in EQ-5D VAS, patients rate how good or bad their health is 'today'.

Statistically significant associations were found between the HRQoL and the residential area of the patient and monthly income. Similar results were obtained in a study by Zhang et al.(19) which showed that urban patients might have higher HRQoL than rural patients. Also, when the income level is increased, HRQoL scores are improved indicating that the socioeconomic status of the patient positively influences the HRQoL of the patient. However, HRQoL was not influenced by age, gender, ethnicity, marital status, and education level.

Strengths and Limitations

The EQ-5D-3L is a well-established and widely used tool for measuring HRQoL. Its use lends credibility and comparability to the study findings. The study collected data on multiple dimensions of HRQoL (mobility, self-care, usual activities, pain/discomfort, and anxiety/depression), providing a holistic view of the patient's well-being. The use of self-completion versions of the EQ-5D-3L in Sinhala and Tamil ensures that the questionnaire is accessible to the study population,

improving the reliability of responses.

The study has limitations. The generalizability of the findings was limited by the fact that the results of this study were limited to one hospitalization and the study was performed only in a single hospital in Sri Lanka.

Future Recommendations:

1. **Enhanced Pain and Symptom Management:** Prioritize targeted interventions for pain and discomfort, as they are the most reported issues among oral cancer patients. Multidisciplinary approaches, including pain management clinics and psychosocial support, may help address these concerns effectively.
2. **Supportive Services for Patients with Low Income and Comorbidities:** Develop financial aid and counseling programs for economically disadvantaged patients and those with comorbidities, as these groups are particularly vulnerable to a lower HRQoL.
3. **HRQoL Monitoring and Intervention Programs:** Implement regular HRQoL assessments using tools like EQ-5D-3L in oral cancer patient care. This could facilitate early identification of those needing additional support and provide insights to healthcare providers for personalized care.
4. **Community-Based Programs for Rural Patients:** Increase outreach efforts to rural areas to ensure equitable access to supportive care and mental health services. Community health workers can play a role in follow-up and continuity of care for patients living farther from the hospital.
5. **Longitudinal Studies:** Conduct further research with longitudinal study designs to explore HRQoL changes over time and to identify factors that contribute to improving or deteriorating HRQoL, which can help refine patient-centered care approaches.

Conclusion

The study provides significant insights into the quality of life (QoL) of patients diagnosed with oral cancer. The results indicated that the majority of the oral cancer patients had good HRQoL while no patients were reporting their self-evaluated health status to be "bad" (on the day of the survey). All the patients in the sample responded that they were in "good" health status even though they were suffering from some/extreme

problems in their respective health dimensions. Only 15% reported no problem in all dimensions of health status. Significant associations were found between HRQoL and residential area ($p=0.019$), monthly income ($p=0.001$) and comorbidities ($p<0.001$). Overall, this study highlights the critical areas affecting the quality of life among oral cancer patients and provides a foundation for improving patient care through targeted interventions and comprehensive management strategies. The findings underscore the importance of integrating HRQoL assessments in routine care to identify patients with unmet needs and to guide support strategies.

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Original Paper

Assessment of Knowledge on Probiotics among State Pharmacists in Northern Province, Sri Lanka

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Abstract:

Introduction: Among nutraceuticals, probiotics, and prebiotics are highly recommended for various diseases. As they are newly introduced into the pharmaceutical world, patients may have difficulties finding reliable information on them. So, knowledge of healthcare professionals, especially pharmacists, on probiotics and prebiotics may help the patients receive scientific evidence-based advice rather than obtaining it from unreliable sources.

Objective: The objective of this study is to assess the knowledge of probiotics and prebiotics among state pharmacists in Northern Province, Sri Lanka.

Method: A descriptive cross-sectional study was conducted among all state pharmacists (N=114) in Northern Province, Sri Lanka by using a structured validated self-administered questionnaire. Data was analyzed by using the SPSS and the bivariate analysis was done by using the chi-square test and Fisher exact test.

Results: The response rate was 92.9%. Among the participants in this study, only 51.9% had adequate knowledge of prebiotics, and 53.8% had adequate knowledge of probiotics.

Conclusion: So, nearly half of the population have inadequate knowledge on probiotics and prebiotics. Introducing more education and training about probiotics and prebiotics could improve the knowledge.

Keywords: Knowledge, Probiotics, Prebiotics, State pharmacists, Sri Lanka

Introduction,

Probiotics and prebiotics are phrases of the modern era. They are not only available in supplement forms but also in various foods. The term probiotic was first used by Lilly and Stillwill (1965) to define “the substances secreted by one microbe that stimulate the growth of another”. Parker (1974) stated that probiotics are organisms and substances that influence the balance of intestinal microbiota” (Amara and Shibl, 2015). Probiotics were defined as “live microorganisms which, when administered in adequate amounts, confer a health benefit on the host” (FAO, 2002). Probiotics can be used to improve the health of both humans and animals through the alteration of intestinal microbiota. Food products consisting of probiotic strains are still growing.

There is increasing evidence for the beneficial effects of probiotics, including improvement of health, increasing immune response and reducing allergy, decreasing serum cholesterol (Yao et al., 2017), type 2 diabetes (Yao et al., 2017), obesity (Kobyliak et al., 2016), and cancer prevention (Thirabunyanon and Boonprasom, 2009). Although some of the health benefits are well documented. Some require additional studies to establish. Due to the wide usage of probiotics, it is important to understand the interaction of probiotics with other drugs. Studies regarding the safety of probiotics are limited yet and there are no guidelines for evaluation.

The term prebiotic is defined as “a non-viable food component that confers a health benefit on the host

associated with modulation of the microbes” (FAO, 2007). Common prebiotics in use include fructo-oligosaccharides (FOS), galacto-oligosaccharides (MOS), soya-oligosaccharides, pyrodextrins, isomalto-oligosaccharides, inulin, lactulose, and xylo-oligosaccharides (XOS) (FAO, 2007). Prebiotics may relieve symptoms of IBD, lower daily energy (fat) intake and lower colon cancer rates (Conway, 2016) (FAO, 2007).

Development in microbial research has led to the formation of synbiotics, which are a fusion of probiotics and prebiotics and help in enhancing the survival and implantation of microbial dietary supplements in the gut. The synergistic benefits are more efficiently promoted when both probiotics and prebiotics work together in the living system (Gibson et al., 2004).

Due to potential safety issues regarding probiotics, the recommendation of probiotics is restricted among healthcare professionals. Because probiotics and prebiotics are not included in the British National Formulary. There may be insufficient facilities to access the scientific evidence regarding probiotic and prebiotic usage among healthcare professionals. There are numerous advantages and health benefits associated with probiotics or probiotic food products, but there are risks associated with probiotic therapy. These risks are mainly concerned concerning safety in vulnerable target groups such as immune-compromised individuals (pregnant women, babies and the elderly) or critically ill or hospitalized patients. The use of probiotics persists because there are no conclusive studies on specific strains to be used, their formulations, and dose administration (Hussain, 2013). The importance of healthcare workers knowing probiotics has previously been pointed out by several researchers (Oliver et al., 2014). Leading and knowledgeable healthcare professionals and health departments may play a vital role in the awareness of the medical community to ensure the correct use of probiotics, not only for treatment but for preventive purposes as well.

Among healthcare professionals, pharmacists are the bridge between doctors and patients, who counsel and advise the patient to maximize the desired effect of the drug and minimize the adverse effects of the drug. As probiotics and prebiotics are newly introduced into the pharmaceutical world, patients may have difficulties finding reliable information on them. So, knowledge of healthcare professionals, especially pharmacists, on

probiotics and prebiotics may help the patients receive scientific evidence-based advice rather than obtaining it from unreliable sources.

So, the objective of this study is to assess the knowledge of probiotics and prebiotics among state pharmacists in Northern Province, Sri Lanka.

Methods

A descriptive cross-sectional study was conducted among state pharmacists in Northern Province, Sri Lanka from July 2019 to October 2020. A self-administered questionnaire was administered among participants. A self-administered questionnaire contained three sections (A, B and C). Section A was designed to collect information about selected socio-demographic factors and work-related factors. Sections B and C were designed to collect data on the knowledge of probiotics and prebiotics. Data collection was done after obtaining ethical clearance from the Ethics Review Committee, Faculty of Medicine, University of Jaffna. The purpose of this study was explained to state pharmacists by the researcher and written consent was obtained from them. The anonymity of the participants was ensured by not collecting any personal identity information. Clear guidelines were given to fill out the questionnaire. The questionnaire was provided to them and a 20-minute time was given to fill up and was collected immediately after they finished. All data were analyzed using SPSS 23 (Statistical Package for Social Science version 23). The research problems, specific objectives and variables were examined and the results were expressed in tables and diagrams. The relationship between categorical and continuous variables was determined by the chi-square test and t-test respectively. All data were kept confidential by using a lock and key cupboard.

Results

The respondent rate of present study was 92.9%. Majority of the participants were females (66.0%) with mean age of (34.71±7.886) years and only 23.6% were degree holders. Majority (73.6%) had <10 years of experiences. Majority of the participants did not participate to any seminar, workshops or

Level of knowledge	Prebiotics	probiotics
Adequate knowledge	51.9%	53.8%
Inadequate knowledge	48.1%	46.2%

conferences within last 5 years regarding probiotics and prebiotics. The above table shows that overall knowledge level of Probiotics and Prebiotics among state pharmacists in Northern Province, Sri Lanka.

Fig.1 shows that only 14(13.2%) of participants had written the correct definition of prebiotics. Additionally, only 10(9.4%) of participants provided correct examples of prebiotics. Furthermore, 28(26.4%) of participants accurately identified prebiotic fortified foods. While only 15(14.2%) of participants correctly chose clinical usages of prebiotics. Lastly, only 9(8.5%) of participants correctly identified the mechanism of actions of prebiotics.

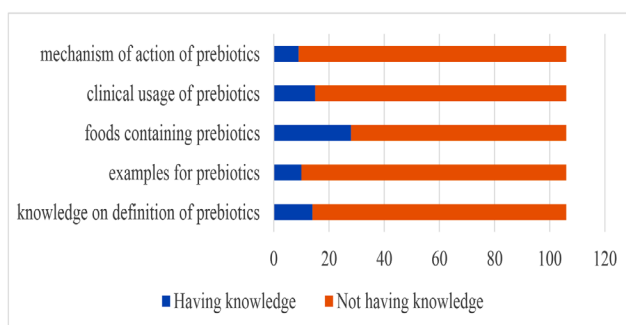
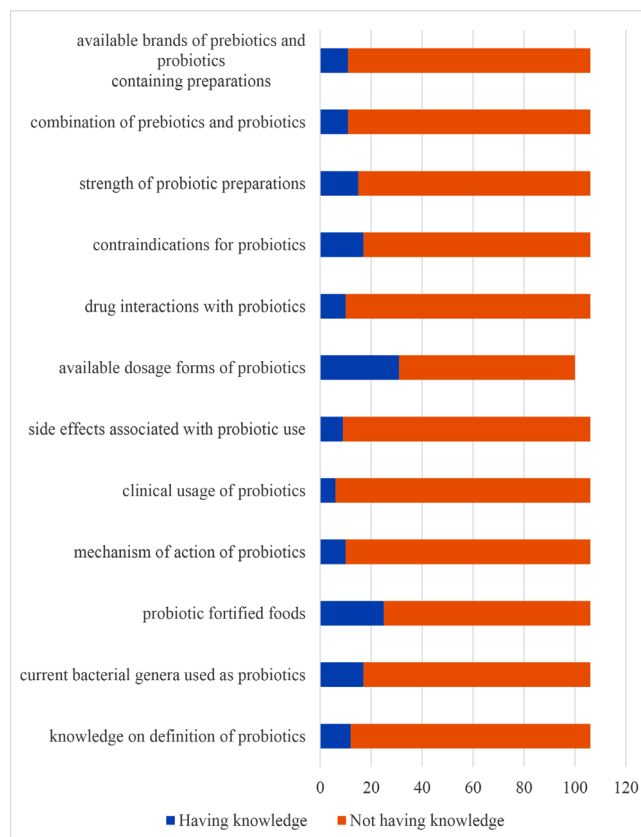


FIG.1: DISTRIBUTION OF KNOWLEDGE ON PREBIOTICS

Fig.2 shows that only 12 participants (11.3%) provided a correct written definition of probiotics. Seventeen participants (16.0%) correctly identified the current bacterial genera used as probiotics. Twenty-five participants (23.6%) accurately selected probiotic-fortified foods. Additionally, only 10 participants (9.4%) correctly identified the mechanisms of action of probiotics, while 6 participants (5.7%) correctly identified the clinical uses of probiotics. Nine participants (8.5%) accurately identified the side effects of probiotic use, and 31 participants (29.2%) correctly identified the available dosage forms of probiotics. Only 10 participants (9.4%) correctly identified drug interactions with probiotics, and 17 participants (16.0%) accurately selected the contraindications for probiotics. Fifteen participants (14.2%) correctly identified the strength of probiotic preparations. Nearly 47 participants (44.3%) correctly identified available brands of prebiotic and probiotic-containing preparations, while only 11 participants (10.4%) correctly selected specific brands.

FIG.2: DISTRIBUTION OF KNOWLEDGE ON PROBIOTICS



Discussion

This cross-sectional study investigated pharmacist knowledge of prebiotics and probiotics in Northern Province, Sri Lanka. The response rate in our study was an impressive 92.9%, closely aligned with Ababneh et al. (2019), which reported 92.3%. In contrast, other studies, such as Amarouche (2016), had a lower response rate of 73.67%, while research conducted by Oliver et al. (2014) in the USA noted only a 9% response rate among healthcare professionals. The significant discrepancy in response rates can be attributed to variations in the data collection methods employed, the engagement strategies applied to reach participants, and possibly the perceived relevance of the topic among the health professionals surveyed.

The findings reveal significant knowledge gaps among pharmacists on both prebiotics and probiotics, which could restrict patient access to the full spectrum of health benefits from both prebiotics and probiotics. Our study found that many pharmacists lacked comprehensive knowledge in both areas. In contrast, 88% of healthcare providers in the USA were familiar with probiotics, only 22% were aware of prebiotics (Oliver et al., 2014). For instance, only 9.4% could correctly identify all mechanisms of action for

probiotics, significantly lower than the 66.6% reported in India (Soni, Tank, and Jain, 2018) and the 82.3% among medical students in Jordan (Altamimi et al., 2019). This discrepancy may be due to differences in educational curricula, access to continuing professional development, and the overall emphasis on probiotics and prebiotics in the respective healthcare systems.

Moreover, our study indicated that 14.2% of pharmacists accurately recognized the health benefits of probiotics. This is notably lower than the 54.7% reported by Soni et al. (2018) and 59.7% in a study by Payahoo et al. (2012). These differences may be influenced by the availability of training programs, resources, and outreach efforts related to probiotics in their respective countries. In our case, the lack of participation in relevant seminars, workshops, or conferences over the past five years indicates a noticeable gap in professional development opportunities, this gap likely contributes to the limited knowledge we have observed.

Additionally, the finding that 84% of our participants were unaware of the specific strains used as probiotics aligns with Fijan et al. (2019), where 65.9% also lacked this knowledge. This highlights a broader issue of insufficient education on microbiological specifics within pharmacy curricula, which may not adequately prepare pharmacists to counsel patients effectively on these topics.

In conclusion, the observed differences in knowledge levels among pharmacists can largely be attributed to variations in educational focus, availability of professional development opportunities, and the relevance of probiotics and prebiotics within different healthcare contexts.

Conclusion

Nearly half of the state pharmacists in Northern Province, Sri Lanka have inadequate knowledge on probiotics and prebiotics. Participants should be educated on definitions, mechanism of actions, examples, foods sources and clinical usages for both probiotics and prebiotics and also on drug interactions, side effects, contraindications, strengths, dosage forms and brands for probiotics and prebiotics containing preparations. So, more seminars/workshops or conferences regarding probiotics and prebiotics should be organized for improvement of knowledge on them and responsible authority should take actions regarding this. Advanced researches that are being conducted

all over the world should be placed on the table of healthcare professionals and if possible, it should be translated in local languages.

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Original Paper

Comparison of Breast Cancer Management and Outcomes in a Single Cancer Surgical Unit in Teaching Hospital- Batticaloa, Sri Lanka: A Retrospective Analysis of Two Time Periods (2016-2018 vs. 2022-2024)

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Abstract:

Objective: To compare the clinical characteristics, management approaches, and surgical outcomes of breast cancer patients treated at this institution during two distinct time periods (2016–2018 and 2022–2024).

Methods: A retrospective review of breast cancer cases was conducted. A total of 93 female patients were included in each period, categorized into early invasive breast carcinoma (EIBC), locally advanced breast carcinoma (LABC), and metastatic breast carcinoma (MBC). Treatment modalities, including neoadjuvant chemotherapy, breast conservation, sentinel lymph node biopsy, and breast reconstruction, were compared between the two cohorts.

Results: In the 2022–2024 period, there were fewer cases of early invasive breast carcinoma (44.1% vs. 53.8%) and a higher incidence of locally advanced breast carcinoma (45.2% vs. 33.3%). The use of neoadjuvant chemotherapy for LABC increased significantly (30.2% vs. 19.3%), and sentinel lymph node biopsy (SLNB) was more frequently performed (26.9% vs. 6.5%). Positive SLNB results led to axillary clearance in 7 cases during the later period, whereas no cases in the earlier cohort required further intervention.

Breast conservation rates decreased (33.3% vs. 39.8%) in 2022–2024 which is due to a raised aged population with medical comorbidities, but 6 patients underwent breast reconstruction post-mastectomy compared to none in 2016–2018.

Conclusions:

The shift in breast cancer presentation and management between 2016–2018 and 2022–2024 at this institution reflects evolving treatment strategies. Increased use of SLNB and breast reconstruction are notable, as well as a higher uptake of neoadjuvant chemotherapy in LABC. Further study is required to assess the long-term impact of these changes on patient outcomes and quality of life.

Breast cancer-related awareness, associated comorbidities and sociocultural norms of the patients might have affected the patient preferences of management options. In addition, the availability of the Mammogram, chemotherapy, intervention radiologist, and methylene blue for the Sentinel Lymph Node Biopsy (SLNB) might have affected the diagnostic stage and surgical options.

Introduction,

Breast cancer remains one of the most prevalent malignancies worldwide, with significant variations in presentation and management strategies across different institutions and time periods (1). Over the past decade, advances in diagnostic techniques, chemotherapy, and surgical options have transformed the landscape of breast cancer care (2). Understanding these changes

is essential for optimizing treatment protocols and improving patient outcomes.

This study aims to retrospectively compare the management of breast cancer patients at a single institution during two distinct time periods: 2016–2018 and 2022–2024. By analysing clinical characteristics, treatment modalities and surgical outcomes,

researchers aim to highlight trends and differences in the management of early invasive breast carcinoma (EIBC), locally advanced breast carcinoma (LABC), and metastatic breast carcinoma (MBC).

Methods

Study Design

A retrospective review was conducted of breast cancer patients treated at this institution during two separate time periods: 2016–2018 and 2022–2024. A total of 93 female patients were included in each cohort, with the following breast cancer subtypes:

- Early Invasive Breast Carcinoma (EIBC)
- Locally Advanced Breast Carcinoma (LABC)
- Metastatic Breast Carcinoma (MBC)

Subtypes were categorized according to Union for International Cancer Control (UICC)

Early stage : T1-2, N0-1, M0, Locally Advanced : any-T, N2-3, M0 & T3, any-N, M0

Metastatic disease: any-T, any-N, M1

Ethical consideration:

Permission obtained from the director Teaching Hospital-Batticaloa to extract the details from clinical records maintaining patient confidentiality.

Data Collection

Clinical data, including cancer stage at diagnosis, treatment modalities (neoadjuvant chemotherapy, mastectomy, breast conservation, sentinel lymph node biopsy, and breast reconstruction), and pathological findings, were extracted from medical records.

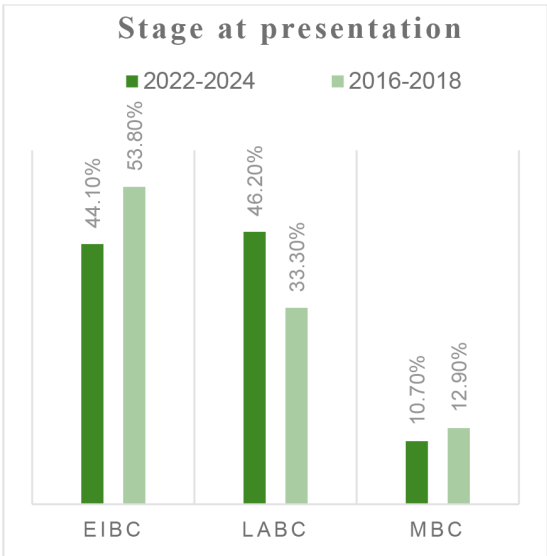
Data were categorized based on the defined breast cancer types and the treatments received.

Results

Patient Demographics and Tumour Characteristics

In both time periods, 93 female patients were treated for breast cancer. However, the distribution of breast cancer subtypes varied between the two cohorts:

- 2016–2018: EIBC (53.8%), LABC (33.3%), and MBC (12.9%)
- 2022–2024: EIBC (44.1%), LABC (45.2%), and MBC (10.7%)



This indicates an increase in the proportion of LABC cases over time and a slight decrease in early-stage and metastatic breast cancer presentations.

Age distribution

Table 1 Age distribution in each cohort

Age	2022-2024	2016-2018
30-40	05 (05.37%)	09 (09.67%)
41-50	19 (20.43%)	41 (44.08%)
51-60	33 (35.48%)	31 (33.33%)
61-70	25 (26.88%)	12 (12.90%)
71-80	11 (11.82%)	00 (00.00%)
Mean	57	51
SD	11	7.5

- **In the 2016–2018 cohort:** mean age was 51 varying between 33 to 69 y (SD 7.5)
- **In the 2022–2024 cohort:** mean age was 57 varying between 32 to 80 y (SD 11) and it correlates with the current trend in Sri Lanka (3).

Neoadjuvant Chemotherapy

- **In the 2016–2018 cohort,** 6 of the 31 LABC cases (19.3%) received neoadjuvant chemotherapy.
- **In the 2022–2024 cohort,** 13 of the 43 LABC cases (30.2%) received neoadjuvant chemotherapy (p = 0.048). In this cohort higher proportion of breast cancer has been detected in patients with aged above 50 years.

The age and comorbidities highly negatively impacted on neoadjuvant chemotherapy. Hence most of them underwent mastectomy rather than breast conservation approach.

However the increase in neoadjuvant chemotherapy utilization for LABC in the later cohort reflects changing treatment paradigms aimed at improving surgical outcomes and reducing tumour size preoperatively.

Sentinel Lymph Node Biopsy (SLNB)

- SLNB was performed in 6 cases (6.5%) during 2016–2018, with no positive metastatic deposits detected.
- SLNB was performed in 25 cases (26.9%) in the 2022–2024 cohort, with 7 (28%) positive for metastatic deposits, leading to subsequent axillary clearance.

This reflects an increased adoption of SLNB in the latter period, as well as a higher incidence of nodal involvement, possibly indicating more aggressive disease at presentation.

Standard practice of SLNB prevent significant amount of unnecessary axillary clearance (AC) (4).The SLNB had prevented 72 % of unnecessary AC and related morbidities in the later cohort.

Surgical Approaches

- **Breast Conservation Surgery (BCS)** was offered to 37 patients (39.8%) in 2016–2018, compared to 31 patients (33.3%) in 2022–2024.
- **Mastectomy with Reconstruction:** No patients in 2016–2018 were offered breast reconstruction, whereas 6 patients in 2022–2024 (6.5%) underwent reconstruction following mastectomy.

This highlights a trend toward offering more reconstructive options in recent years, likely reflecting advances in reconstructive surgery techniques and improved patient quality of life.

Table 2 Treatment characteristic of women with breast cancer at Onco-Surgical Unit, Teaching Hospital-Batticaloa during 2022-2024

Presenting stage		Treated with neoadjuvant	No Neoadjuvant	Breast Conservation + SLNB	Breast Conservation n + AC	Mastectomy + SLNB	Mastectomy+ AC	Subsequent AC following SLNB
Early	41	0	41	17 LICAP-4 Grisotti flap-2	7	8	9	7
Locally advanced	42	13			7 LICAP -2			
			29			2	6 TRAM -3 27 TRAM-2 LD Flap-1	
Metastatic	10		10				10	
Total	93	13	80	17	14	10	52	

Table 3 Treatment characteristic of women with breast cancer at Onco-Surgical Unit, Teaching Hospital-Batticaloa during 2016-2018

Presenting stage		Treated with neoadjuvant	No Neoadjuvant	Breast Conservation + SLNB	Breast Conservation n + AC	WLE only	Mastectomy+ AC	No positive LNs in AC with no neoadjuvant
Early	50		50	6	29	4	11	9
Locally advanced	31	6	25		2		29	5
Metastatic	12						12	
Total	93	18	75	6	31	4	52	14

Discussion

The data presented offers insight into the evolution of breast cancer diagnosis, treatment, and outcomes at a single institution over two time periods: 2016-2018 and 2022-2024. Each period had 93 female cases, which were further categorized into early invasive breast carcinoma (EIBC), locally advanced breast carcinoma (LABC), and metastatic breast carcinoma (MBC). Several important trends are observed in

terms of treatment approaches, the use of neoadjuvant chemotherapy, sentinel lymph node biopsy (SLNB), breast conservation surgery (BCS), and breast reconstruction.

Globally, breast cancer is the most common cancer in women, and incidence rates vary by region. In high-income countries, early detection through screening programs has led to an increase in early-stage diagnoses. In contrast, low- and middle-income

countries, including Sri Lanka, tend to have a higher proportion of locally advanced and metastatic cases at the time of diagnosis due to limited access to early detection services and lower awareness levels.

The distribution of breast cancer types between the two time periods shows a concerning shift towards more locally advanced cases (31 cases in 2016-2018 vs. 43 cases in 2022-2024) and a slight decrease in early invasive cases (50 in 2016-2018 vs. 41 in 2022-2024). Globally, early detection campaigns have been pivotal in diagnosing breast cancer at earlier stages (5).

The observed trend in Sri Lanka may suggest either a delay in diagnosis or an increase in aggressive disease presentations. These delays can be attributed to socioeconomic factors, limited access to screening programs, or patient hesitation in seeking medical care due to stigma.

In the 2016–2018 cohort mean age of diagnosis was 51 while that of 2022–2024 cohort was 57. The mean age of breast cancer diagnosis in Sri Lankan women is 56 (6). Hence it correlates with its own national trend.

In high-income countries like the United States and those in Europe, the use of mammography and other screening techniques has led to a higher proportion of breast cancer cases being detected at early stages (EIBC) (5). For example, in the U.S., around 60-70% of breast cancer cases are diagnosed at early stages, compared to the lower rates observed in Sri Lanka's data. In contrast, locally advanced cases tend to be more frequent in low- and middle-income regions, where awareness and screening programs may not be as widely available.

Neoadjuvant chemotherapy is increasingly used in cases of LABC and selected cases of EIBC, with the aim of reducing tumour size before surgery and allowing for breast-conserving procedures. In 2022-2024, 13 of 43 LABC cases (30.2%) were treated with neoadjuvant chemotherapy, compared to 6 of 31 (19.3%) in 2016-2018. This rise reflects a growing trend toward NAC in the treatment of LABC. However, the utilization rate remains lower than in many high-income countries, where NAC is now standard for a majority of LABC cases. The increase from 2016-2018 to 2022-2024 shows that our unit is gradually aligning with international protocols.

In high-income countries, NAC is commonly used for patients with LABC and some high-risk EIBC to

improve surgical outcomes and increase the likelihood of breast conservation. According to global data, up to 50-60% of patients with LABC may receive NAC.

In countries with advanced cancer care systems, molecular subtyping (e.g., HER2, hormone receptor status) guides NAC use, and tailored treatment protocols based on these subtypes improve survival rates and decrease recurrence. This level of personalization may not be as readily available in Sri Lanka due to resource constraints.

Sentinel lymph node biopsy is now considered the standard of care for axillary staging in clinically node-negative breast cancer patients (7). The shift from full axillary dissection to SLNB reduces the risk of complications such as lymphedema while maintaining diagnostic accuracy. In 2016-2018, only 6 cases (6.5%) underwent SLNB, with none having metastatic deposits. In contrast, SLNB was performed in 25 cases (26.9%) in 2022-2024, with 7 positive for metastatic deposits, leading to axillary clearance. The increase in SLNB usage over time is encouraging and reflects a broader adoption of global standards.

In high-income countries, SLNB is performed in majority of clinically node-negative breast cancer patients. The widespread adoption of SLNB (around 70-80% of eligible patients) represents a significant shift from the more invasive axillary lymph node dissection. The positive SLNB rate in global studies varies between 15-30%, aligning with this unit percentage of 28% positive nodes in 2022-2024. However, the significantly lower utilization of SLNB in the 2016-2018 period highlights a gap in early adoption compared to global standards.

Breast conservation therapy, which includes lumpectomy followed by radiation therapy, has become the preferred approach for many patients with early-stage breast cancer, as it provides similar survival rates to mastectomy while offering better cosmetic outcomes and quality of life.

In 2016-2018, 37 patients (39.8%) were offered breast conservation surgery, whereas in 2022-2024, the number decreased slightly to 31 patients (33.3%). The decrease in breast conservation rates may reflect the increase in more advanced-stage presentations (LABC) in the latter period, which limits the applicability of BCS. Furthermore, mastectomy may be preferred in patients with limited access to postoperative radiation therapy, which is a critical component of breast conservation.

In high-income countries, BCS rates are higher, with up to 60-70% of early-stage breast cancer patients opting for this approach when feasible (8). The global increase in BCS is driven by advances in radiation therapy, neoadjuvant chemotherapy, and oncoplastic techniques. The lower rate in our unit may be influenced by several factors, including the age, comorbidities, patient preference and advanced stage presentation.

Breast reconstruction after mastectomy is an essential aspect of breast cancer care, significantly improving psychological well-being and quality of life (9). In 2016-2018, no patients were offered breast reconstruction, whereas 6 patients (6.5%) underwent reconstruction after mastectomy in 2022-2024.

Image i - Transverse Rectus Abdominis Muscle (TRAM) Flap marking

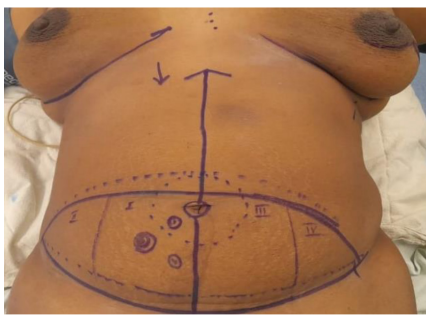


Image ii - Mastectomy for TRAM flap reconstruction



Image iii - Harvested TRAM flap



Image iv- after donor site reconstruction



Image v- After the breast reconstruction



Image vi- Lateral intercostal artery perforator (LICAP) flap reconstruction step-1



Image vii - LICAP reconstruction step-2



Image viii- Axillary SLNB



The availability of breast reconstruction options has increased, indicating a positive shift in patient care, although the rate remains low compared to global standards. The lack of reconstructive surgery in earlier periods may reflect cultural emphasis on mastectomy without reconstruction mostly.

In high-income countries, reconstruction rates are significantly higher, with some studies reporting up to 40-50% of mastectomy patients opting for reconstruction (10). The global rise in immediate reconstruction is driven by advancements in reconstructive surgery techniques, including implant-based and autologous tissue reconstructions.

It is mandatory that reconstruction is often offered as a routine part of breast cancer care. Barriers to reconstruction in our institute may include a lack of specialized plastic surgeons and patient awareness.

The observed differences in both cohort might be due to the breast cancer related awareness, associated comorbidities and sociocultural norms of the patients which affect the patients' preferences of management options. The availability of the Mammogram, chemotherapy, methylene blue for the Sentinel Lymph Node Biopsy (SLNB), availability of intervention radiologist for the radiological guided histological or cytological samples might had affected the diagnostic stage and treatment option.

Recommendations

1. Early Detection and Screening Programs:

One of the key reasons for the high rates of locally advanced and metastatic breast cancer in Sri Lanka may be the lack of widespread mammography screening programs. High-income countries have significantly

reduced late-stage breast cancer presentations through national screening programs. Efforts to introduce or expand screening programs in Sri Lanka, coupled with public health campaigns to raise awareness, could lead to earlier diagnoses and better outcomes.

2. Neoadjuvant Chemotherapy (NAC) Usage:

The increase in NAC for LABC cases in 2022-2024 aligns with global trends, but further emphasis on NAC for downstaging tumours and increasing the rate of breast conservation could be beneficial. Standardizing the use of NAC for eligible patients and providing access to targeted therapies (such as HER2-targeted treatments) could improve outcomes in locally advanced breast cancer.

3. Training in SLNB and Reconstruction Techniques:

Increasing access to SLNB and breast reconstruction through specialized training for surgeons could improve adherence to global standards of care. Collaboration with local and international organizations and offering fellowship programs could bridge the gap in surgical expertise.

4. Access to Postoperative Care:

Ensuring that all patients undergoing breast conservation have access to postoperative radiation therapy is crucial for increasing BCS rates. Strengthening radiation oncology infrastructure and established coordination between oncologist and surgeon will be essential for improving overall care.

Conclusion

The management of breast cancer in this unit has shown improvements between 2016-2018 and 2022-2024, with increases in the use of neoadjuvant chemotherapy, SLNB, and breast reconstruction. Early detection of breast cancers will improve the breast conservation rates.

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Featured Article

Transforming Healthcare Through Collaboration: The Partnership of Sri Sathya Sai Sanjeevani Hospital, Eastern University, and Teaching Hospital, Batticaloa

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Introduction

Sri Sathya Sai Sanjeevani Super Specialty Hospital (SSSSSH) in Kirankulam, Batticaloa, Sri Lanka, has introduced a transformative healthcare model in the Eastern Province. In collaboration with Teaching Hospital Batticaloa, Eastern University, and other regional hospitals, SSSSSH provides free, advanced cardiac care to underserved populations. This initiative is part of the global humanitarian mission led by Sadguru Sri Madhusudan Sai, whose work spans education, healthcare, and nutrition across 32 countries. By offering specialized services at no cost, the hospital is reshaping healthcare access in a region where such care was previously unavailable.

Mission and Founding Principles

Founded in 2016, SSSSSH operates on the principles of selfless service and non-discriminatory healthcare, aligning with Sadguru Sri Madhusudan Sai's vision of "Love All, Serve All." The hospital provides free cardiac services to patients regardless of their ethnicity, religion, or financial background, promoting social harmony in a historically divided region. This commitment to equality in healthcare reflects the hospital's broader mission to uplift communities and foster peace through humanitarian outreach.

Cath Lab: A Game-Changer for Cardiac Care

In June 2022, SSSSSH established the first Cath Lab in Sri Lanka's Eastern Province, providing free coronary interventions that were previously inaccessible in the region. After years of effort and global donor support, the Cath Lab now performs critical procedures such as coronary angiograms and stenting. Since its inception, over 1,700 angiograms have been conducted, to reach 2,000 interventions by August 2024.

The Cath Lab operates through collaboration not only with Teaching Hospital Batticaloa but also with Base Hospital Kalmunai, Base Hospital Kaluwanchikudy, and Base Hospital Kattankudy. These hospitals provide essential human resources, including cardiologists and radiographers, allowing SSSSSH to scale its services. The lab currently operates three days a week but plans to expand to five days to meet rising demand. The Cath Lab's services are sustained by international donations, with operating costs exceeding 8 million LKR monthly, making this a truly unique model in Sri Lanka.

Pediatric and Adult Cardiac Surgeries

SSSSSH began pediatric cardiac surgeries in 2022, successfully treating nine children with congenital heart defects. However, the hospital's vision extends beyond pediatric care. By December 2024, a state-of-the-art surgical facility will be operational, enabling the hospital to offer adult cardiac surgeries starting in 2025. This expansion will include treatments for congenital heart diseases, valvular repairs, and coronary artery bypass grafting (CABG), offering comprehensive cardiac care previously unavailable in Batticaloa.

The introduction of adult cardiac surgeries represents a significant milestone, as these advanced procedures were once unimaginable in this part of Sri Lanka. The fact that they will be offered free of cost to all patients underscores the hospital's mission to make life-saving healthcare accessible to everyone, regardless of their financial circumstances.

Expansion of Services

The hospital's collaborative partnerships extend beyond Batticaloa. SSSSSH has formal agreements through a Memorandum of Understanding (MOU) with Teaching

Hospital Batticaloa, Eastern University, and other regional hospitals such as Base Hospitals in Kalmunai, Kaluwanchikudy, and Kattankudy. These partnerships facilitate the sharing of human resources, including cardiologists, radiographers, and support staff, enabling the hospital to manage the increasing demand for cardiac services.

SSSSSH's ongoing efforts include increasing the Cath Lab's operation from three to five days per week and recruiting additional medical staff to further expand its service capacity. As the sole provider of Cath Lab services in the Eastern Province, SSSSSH plays a critical role in addressing the cardiac care needs of a diverse and underserved population.

Holistic Healthcare Approach

SSSSSH takes a holistic approach to healthcare, addressing not only medical needs but also the nutritional and emotional well-being of its patients. Since its inception, the hospital has distributed over 69,000 meals to local villagers, emphasizing the importance of nutrition in recovery, especially for pediatric cardiac patients. This nutrition program, along with preventive care outreach initiatives, forms a core part of the hospital's strategy to improve community health.

The hospital's outreach programs focus on education and prevention, aiming to reduce the long-term burden of heart disease in the region. Through screenings, health education, and nutritional support, SSSSSH is working to improve the overall health and well-being of the communities it serves, laying the foundation for healthier future generations.

Impact on Social Harmony

In addition to its medical contributions, SSSSSH is fostering social harmony in the ethnically diverse Eastern Province. The hospital's policy of offering free, non-discriminatory healthcare to all patients, regardless of ethnicity or religion, has helped bridge divides in a region with a history of civil conflict. By providing life-saving care to individuals from all backgrounds, SSSSSH transcends social divisions, promoting peace and unity through its work.

Moreover, by collaborating with multiple regional hospitals, SSSSSH strengthens the healthcare infrastructure of the Eastern Province as a whole. The hospital's efforts to share expertise and resources with neighboring facilities ensure that more patients can

benefit from advanced cardiac care, further solidifying its role as a catalyst for both medical and social progress.

Challenges and Future Plans

Despite its remarkable achievements, SSSSSH faces several challenges as it seeks to expand its services. One of the primary challenges is the need for additional cardiologists and medical staff to meet the growing demand for Cath Lab procedures. Collaborations with Base Hospitals Kalmunai, Kaluwanchikudy, and Kattankudy have been essential in addressing this need, but further support is required.

Financial sustainability is another ongoing concern. The hospital's reliance on global donors to cover operating costs, which exceed 8 million LKR monthly, highlights the importance of continued international support to maintain and expand its services. Additionally, the hospital urgently needs an ambulance to improve emergency transport for patients, a resource that would significantly enhance its capacity to respond to critical cases.

Conclusion

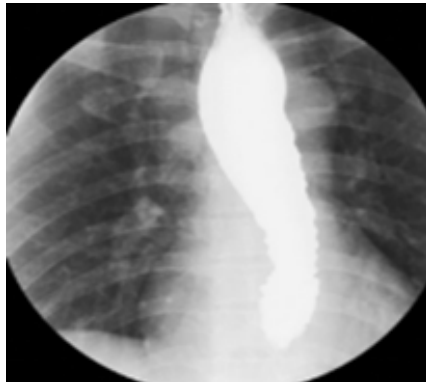
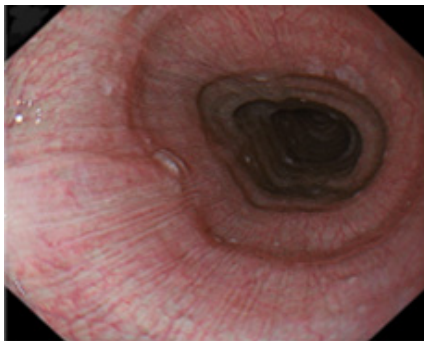
Sri Sathya Sai Sanjeevani Hospital in Kirankulam, Batticaloa, is a pioneering healthcare model in Sri Lanka. Through its collaboration with Teaching Hospital Batticaloa, Base Hospitals in Kalmunai, Kaluwanchikudy, and Kattankudy, and Eastern University, the hospital provides free, advanced cardiac care to a population that previously had little access to such services. The hospital's Cath Lab, pediatric surgeries, and upcoming adult cardiac interventions are testaments to its commitment to transforming healthcare in the Eastern Province.

As SSSSSH continues to expand its services, particularly with the introduction of adult cardiac surgeries, it will solidify its role as a key healthcare provider in the region. This unique model demonstrates the power of global cooperation, regional collaboration, and charitable healthcare in addressing the most pressing medical needs of underserved populations. By integrating medical expertise, humanitarian values, and a commitment to social harmony, Sri Sathya Sai Sanjeevani Hospital serves as a beacon of hope and a model for holistic healthcare delivery in resource-limited settings.

Quiz 1

A case of heartburn

An upper gastrointestinal endoscopy and a timed contrast swallow radiography were performed on a 25-year-old female who presented with symptoms of chronic heartburn. Her symptoms resolved completely following an endoscopic intervention procedure.



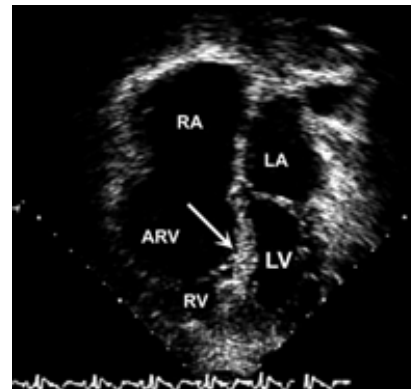
What is the diagnosis?

- A. Oesophageal cancer
- B. Gastric outflow obstruction
- C. Achalasia cardia
- D. Gastro-oesophageal reflux disease

Quiz 2

A cyanosed newborn

A term neonate who had an uneventful antenatal period and birth was found to be cyanosed at 24 hours. These are his CXR and 2D echocardiogram films.



What is the diagnosis?

- A. Tricuspid atresia
- B. Ebstein anomaly
- C. Transposition of great arteries
- D. Hypoplastic left heart syndrome
- E. Total anomalous pulmonary venous drainage

Case report

True Brachial Artery Aneurysm Complicated with Acute Limb Ischemia and Compartment Syndrome

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Abstract:

True brachial artery aneurysms are rare and brachial artery aneurysms presenting with acute limb ischemia and compartment syndrome is even rarer. The scope of this report is to present a case of a 45-year-old male presented with a true brachial artery aneurysm of the left upper limb complicated with acute limb ischemia and compartment syndrome of the left forearm secondary to thromboembolism. He underwent fasciotomy, embolectomy, and surgical repair of aneurysms and later developed Volkmann's ischemic contracture of the left upper limb.

There were no locally reported cases found in our literature review with true brachial artery aneurysms presenting with acute limb ischemia and compartment syndrome.

Introduction,

True arterial aneurysms of the upper extremity distal to the axillary artery are rare and most commonly caused by blunt trauma [1]. Among them, true brachial artery aneurysms are even more unusual and usually caused by infectious, post-traumatic, or iatrogenic [2]. The most common presentation of arterial aneurysms is the perception of mass but thromboembolic, paresthesia or rupture also can be observed [3]. We herein report a true brachial artery aneurysm presented with severe acute limb ischemia of the upper limb.

Case history

A 45-year-old previously healthy male presented with sudden onset of the left hand and forearm pain for 8 hours. There was no history of trauma and no previous similar hospitalizations. Examination revealed a cold forearm below the elbow with an absent radial pulse, reduced motor power, paresthesia, and pain during both active and passive hand movements. Further examination revealed a pulsatile 4×4 cm lump in the left medial upper arm. A clinical evaluation concluded as acute limb ischemia of the left upper limb with compartment syndrome secondary to possible thromboembolism from brachial artery aneurysm.

Without further delay, the patient was prepared for an emergency fasciotomy, embolectomy, and excision of the aneurysm. No radiological investigations were done.

The patient underwent fasciotomy of the left forearm and intraoperatively was found to have questionable viability of around 25% of flexor compartment muscles. It was decided to proceed with embolectomy and excision of the brachial artery aneurysm. The brachial artery aneurysm was explored and excised. A large thrombus was seen inside the aneurysm. The embolectomy revealed a large distal embolus. The brachial artery was repaired with an end-to-end anastomosis and the distal pulses appeared with satisfiable pulse volume. The post-operative course was uneventful.

On the third postoperative day, examination revealed non-viable flexor muscles of the left forearm. He underwent excision of the non-viable muscles and was discharged on the tenth postoperative day, and followed up as an outpatient. During the follow-up visit, the patient was noted to have developed Volkmann's ischemic contracture as the fasciotomy wound had healed with secondary intention.

Discussion

True brachial artery aneurysms are a rare entity. Among 581 procedures involving the brachial artery performed at the Cleveland Clinic Foundation between January 1989 and December 2000, only three were repairs of brachial artery aneurysms. Two were iatrogenic false aneurysms following cardiac intervention and only one true case of true aneurysm [2].

Most pseudo-brachial artery aneurysms are the result of trauma, while the reported etiology of a true brachial artery aneurysm has been quite limited [4]. The most commonly identified cause of true aneurysm of the upper limb arteries distal to the axillary artery is repetitive blunt trauma [1].

In keeping with other peripheral aneurysms, thromboembolic complications predominate in upper limb arterial aneurysms [5] and it's an unusual cause for forearm compartment syndrome [6]. Patients who are undergoing fasciotomy after 6 hours of presentation are significantly more likely to develop complications, including neurological deficit, contracture, delayed fracture union, muscle necrosis, and tethering of skin graft to tendon limiting motion [6].

Treatment options depend on size, etiology, and complications. Surgical management options available for brachial artery aneurysms include excision and ligation or revascularization with end-to-end anastomosis, saphenous vein grafts, internal iliac grafts, and vein patches [7]. Surgical treatment is recommended for brachial artery aneurysms that are 1.5-2 times the normal size of the artery or aneurysms containing thrombus, similar to the management of popliteal aneurysms [2].

Brachial artery aneurysms are scarce in the medical literature. No locally reported cases of true brachial artery aneurysms presenting with acute limb ischemia and compartment syndrome were found in our literature review.

Conclusion

A true brachial artery aneurysm presenting with acute thromboembolic complication is a rare phenomenon. High clinical suspicion of a peripheral aneurysm should be in mind when approaching a patient with acute limb ischemia and compartment syndrome of the upper limb. Early presentation and intervention will reduce the morbidity in brachial artery aneurysms with acute thromboembolic complications.

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Case report

Spontaneous Intraperitoneal Rupture of Giant Hydronephrosis Presenting as Acute Abdomen

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Abstract:

Keywords: hydronephrosis, hydroureter, acute abdomen, bladder calculus, neurogenic bladder, Nephroureterectomy.

Hydroureteronephrosis is caused by upper or lower urinary tract obstruction due to intrinsic or extrinsic causes. Functional lower urinary tract obstruction causing giant hydronephrosis in young adults is rare. Spontaneous intraperitoneal rupture of thinned-out renal cortex of giant hydronephrosis presenting as an acute abdomen in a young adult is exceedingly rare.

Case presentation:

A 25-year-old man presented with fever, abdominal pain and haematuria for 3 days to the

casualty ward. He denied loin pain, dysuria, other lower urinary tract symptoms and any urological interventions since childhood. On examination, he was cachectic, ill-looking, febrile, and pale. He was tachycardic with a BP of 100/80mmHg. His abdomen was distended with a prominent lumbar region on the right side. There was generalized tenderness with significant right-sided renal angle tenderness.

Initial investigations showed WBC 28,340/ml, CRP 251 mg/dL, serum creatinine 467 µmol/L, and UFR field full pus cells and red cells. USS and NCCT / KUB and abdomen revealed bilateral hydronephrosis (R>L) with hydroureter and a large bladder calculus.

He was initially managed for urosepsis. The obstructed system was decompressed with a urinary catheter and urine output was monitored. He underwent a hemodialysis session during the initial phase of resuscitation. Clinical parameters did not improve with IV piperacillin/tazobactam and he developed

septic shock. He was admitted to ICU with generalized peritonitis. The USS findings favoured a possible rupture of the hydronephrotic kidney on the right side.

He immediately underwent exploratory laparotomy. Four litres of urine from the peritoneal cavity were evacuated and a peritoneal toilet was done. Bilateral hydronephrosis was noted with a giant hydronephrosis on the right side. There was perforation at the thinned-out part of the renal cortex with evidence of necrosis. A right-sided uretero-nephrectomy and vesicolithotomy were performed. An oval-shaped bladder calculus measuring 6 x 4 cm was removed from the hypertrophied, contracted bladder by standard vesicolithotomy. The bladder was closed with a Foley catheter in situ. Immediate postoperative care was provided in the ICU.

He developed a burst abdomen on day 9 and re-laparotomy was done. Intra peritoneal sepsis was excluded and a minimal localized serous collection was drained with samples for culture. Sutures were cut through the fascial edges. The abdominal wall was primarily repaired again with a mass-closure technique. A flexible cystoscopy was performed by the urology team and mechanical causes of bladder

outlet obstruction were excluded. The histopathologist excluded polycystic kidney disease. He recovered with good nutritional support and was discharged home after 44 days of hospitalization. He was referred to the urology team for urodynamics

Discussion:

Bilateral hydroureteronephrosis occurs commonly due to bladder outlet obstruction (from prostatic enlargement or posterior urethral valves) and neurogenic bladder [1]. Bladder tumours can obstruct one or both ureters or ureteral orifices. Functional lower urinary tract obstruction causing giant hydronephrosis in young adults is rare.

Congenital anomalies such as pelvic ureteric junction obstruction, vesicoureteric reflux, primary megaureter, and posterior urethral valves are the common causes of fetal hydronephrosis. Missed congenital anomalies leading to lower urinary tract obstruction usually present in early childhood. Uncorrected urinary tract obstruction can lead to urosepsis, progressive kidney function impairment, and end-stage kidney disease.

In our case, the intraoperative finding of contracted bladder occupied by a large bladder calculus and post-operative exclusion of mechanical causes for bladder outlet obstruction by flexible cystoscopy suggests that neurogenic bladder as the most likely cause for lower urinary tract obstruction leading to bilateral giant hydronephrosis in this patient.

Giant hydronephrosis is a rare urological complication of obstructive uropathy. Hydronephrosis is termed 'giant' when its content reaches or exceeds 1.5 litres [2]. Reported cases of giant hydronephrosis are scanty. The causes of obstruction in those cases include pelvi-ureteric junction obstruction, obstructive nephrolithiasis, and lower pole vascular plexus.

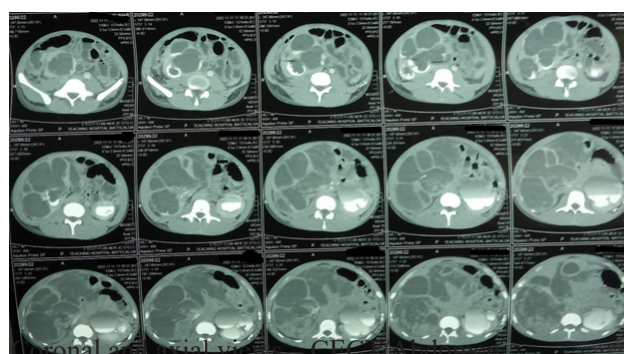
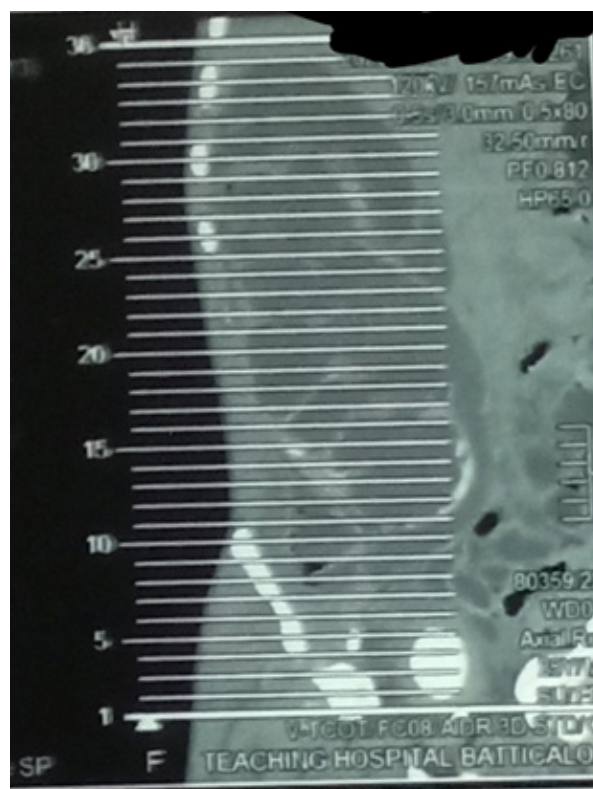
Rupture of a hydronephrotic kidney is uncommon and was reported in association with trauma. A common site of rupture is the renal pelvis and rupture mostly occurs into the retroperitoneal space. Cases reported with intraperitoneal rupture that present as acute abdomen is rare. Spontaneous intraperitoneal rupture of hydronephrosis has been reported by a few authors and causes included pelvi-ureteric junction obstruction [3] and ureteric cancer [4].

Spontaneous rupture of hydronephrosis caused by lower urinary tract obstruction is rare. Joachim and Becker reported a single case with benign prostatic

hyperplasia leading to rupture in the retroperitoneal plane in 1965[5]. Our case is unique because of spontaneous intraperitoneal rupture of giant hydronephrosis occurring through renal parenchyma rather than renal pelvis with probable aetiology of a neurogenic bladder.

Conclusion:

A young adult presenting with abdominal sepsis could rarely be due to intraperitoneal rupture of an infected hydronephrotic kidney. Functional Bladder outlet obstruction is a rare cause of bilateral giant hydronephrosis. Prompt drainage of the obstructed system with management of urosepsis would prevent acute kidney injury and rupture of the hydronephrotic kidney leading to major surgeries.



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Case report

The use of Intraoperative Choledochoscopy in Difficult Biliary Stones – a Report of 3 Cases in Current Clinical Settings.

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Abstract:

Choledocholithiasis occurs in 5-10% of patients with biliary lithiasis. Treatment strategies often involve endoscopic retrograde cholangiopancreatography (ERCP), which may be performed before, during, or after cholecystectomy. Choledochoscopy is an endoscopic procedure that allows direct visualization of the biliary tract for both diagnostic and therapeutic purposes. Intraoperative choledochoscopy has emerged as a valuable tool for the management of difficult choledocholithiasis during biliary tract exploration.

The aim of this case series was to evaluate the effectiveness of intraoperative choledochoscopy in the laparo-endoscopic treatment of challenging stones. The series included three female patients with a mean age of 62 years, of whom two were classified as ASA-2. All patients had a history of at least one episode of acute cholecystitis. During choledochoscopy, a Dormia basket was used for stone extraction in two cases. There were no complications attributable to the laparo-endoscopic procedures, and biochemical parameters improved postoperatively.

CASE -1

A 40-year-old female, classified as ASA 2, presented to the surgical casualty ward with symptoms suggestive of acute cholecystitis. She had experienced two similar episodes in the past. On examination, her vital signs were stable, and Murphy's sign was positive. Initial blood tests revealed elevated liver enzymes (AST: 101 IU/L, ALT: 103 IU/L) with a total bilirubin of 0.8 mg/dL and a direct fraction of 0.5 mg/dL. An abdominal ultrasound showed multiple gallbladder calculi with mild dilation of the common bile duct (CBD) and intrahepatic ducts (IHD). Magnetic resonance cholangiopancreatography (MRCP) demonstrated multiple CBD stones causing CBD and intrahepatic duct dilation.

Endoscopic retrograde cholangiopancreatography (ERCP) was performed, including multiple balloon sweeps; however, a large stone impacted in the CBD could not be retrieved. The decision was made to proceed with cholecystectomy. During laparoscopic cholecystectomy, choledochoscopy was performed intraoperatively. A CBD stone was identified and successfully retrieved with the aid of a Dormia basket. The CBD opening was closed with V-lock sutures.

CASE -2

A 75-year-old female, ASA -3, presented to the surgical casualty with features suggestive of acute cholecystitis. She has had one episode of cholecystitis and an episode of cholangitis in the past. On admission her vitals were stable, and Murphy's sign was negative. Blood test revealed AST – 96, ALT- 73, total bilirubin of 0.7 mg/dL with a direct fraction of 0.3 mg/dL. USS abdomen revealed evidence of acute cholecystitis with multiple gall bladder and CBD stones causing CBD dilatation. MRCP revealed multiple obstructive calculi in CBD causing hepatic and pancreatic duct dilatation and distended gall bladder with multiple calculi. We proceeded with an ERCP and a perampullary diverticulum and a grossly dilated CBD with calculi were seen. A sphincterotomy and balloon sweeping performed failed to retrieve the CBD stone. Laparoscopy cholecystectomy was performed and intraoperative choledochoscopic examination showed a large impacted stone which was retrieved with the help of laparoscopic instruments. The CBD opening was closed with V-lock sutures.

Case - 3

A 72-year-old female, ASA 2, presented with a history suggestive of acute cholecystitis. She has had a similar episode in the past. On examination her vital stable with a negative Murphy sign. Initial blood revealed normal liver function with a total bilirubin of 0.9 mg/dL with a direct fraction 0.4 mg/dL. USS abdomen revealed a distal CBD stone causing extrahepatic and intrahepatic duct dilatation, multiple gall stones with features of chronic calculous cholecystitis. ERCP was arranged, and multiple CBD calculi with duct dilatation were noted. Balloon sweeping was attempted, but calculi could not be retrieved. She underwent laparoscopic cholecystectomy and intraoperative choledochoscopic examination. CBD stone was removed with the use of a Dormia basket. The CBD opening was sutured with V-lock sutures.

Results

In this study, all three patients were female, with a mean age of 62 years. Two of the patients were classified as ASA 2. Each patient had a history of at least one episode of acute cholecystitis, and one patient had also experienced an episode of cholangitis. ERCP failed to extract the stones despite balloon sweeping, and all patients had a plastic stent placed.

During choledochoscopy, a Dormia basket was used for stone extraction in two of the cases.

Drains were in situ for an average of 3 days, and the average hospital stay was 4 days. There were no complications attributable to the laparoendoscopic procedures, and biochemical parameters improved postoperatively.

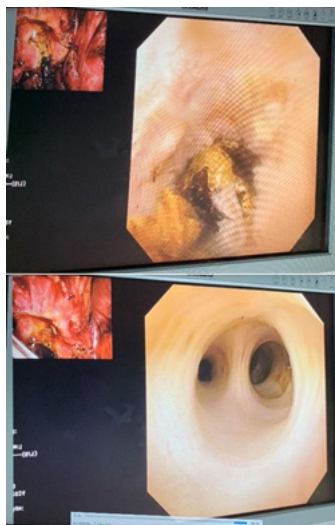


Figure 1 - Intraoperative choledochoscopy

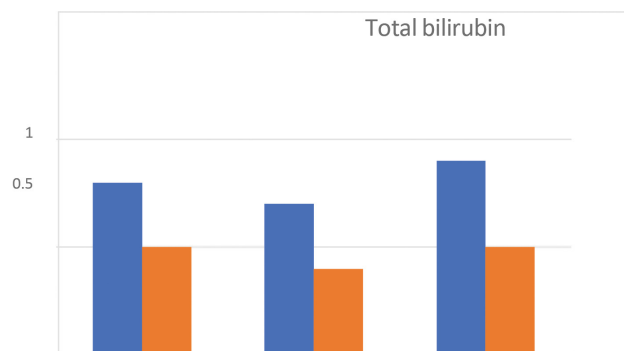


Figure 2 Pattern of total bilirubin level- preop/postop



Age/ gender	ASA Status	Episodes of cholecystitis/ cholangitis	USS	MRCP	ERCP
40 yrs/ F	ASA- 2	3 episodes of acute cholecystitis	Multiple GB calculi Mild IHD/ CBDdilatation.	Multiple CBD calculi causing dilatation CBD dilatation and intrahepatic ducts Largest stone: 12 x 13mm. Contracted GB with stone suggestive of chroniccholecystitis.	Balloon sweeping done several times, fail to extractthe stone. Plastic stent in situ.
75yrs/ F	ASA- 3	1 episode of cholecystitis l episode of cholangitis.	Evidence of acute cholecystitis with multiple gall bladder and CBD stone causing CBDdilatation.	Multiple obstructive calculi in CBD causing hepatic and pancreatic duct dilatation. Largest stone: 19 x 13.5mm. Distended gallbladder with multiple GB calculi.	Periampullary diverticulum. Balloon sweeping done several times, fail to extractthe stone. Plastic stent in situ
72yrs/ F	ASA-2	1 episode of cholecystitis	distal CBD stone causing extrahepatic and intrahepatic duct dilatation, multiple gallstones with features of chronic calculi cholecystitis	Not done.	Periampullary diverticulum Balloon sweeping attempted, but calculi were not removed (sphincterotomy was not sufficient due to adjacent diverticulum)

Table 1 baseline characters and imaging summary

	Methods of extraction	Drain in situ	Hospital stays	Evidence of biliary leakage/bile peritonitis/ surgical site infection
Case 1	- Dormia basket	2 days	3 days	None
Case 2	- Failed to extract with Dormia basket -use of laparoscopic instruments	3 days	4 days	None
Case 3	Dormia basket	3 days	7 days	None

Table 2 follow-up and complications

DISCUSSION

Choledocholithiasis refers to the presence of gallstones within the common bile duct. Approximately 10 to 15 percent of individuals with gallstones will develop symptomatic gallstones over the course of a decade. Of those with symptomatic gallstones, about 10 percent will also have choledocholithiasis. Complications of choledocholithiasis include acute cholangitis and acute pancreatitis. Long-standing biliary obstruction from various causes, including CBD stones, may result in liver disease and progress to cirrhosis, a condition known as secondary biliary cirrhosis.

CBD stones require extraction to manage symptoms and prevent complications such as acute suppurative cholangitis, obstructive jaundice, hepatic abscess, and pancreatitis. Historically, CBD stones were diagnosed with intraoperative cholangiography and treated with open CBD exploration. Advances in preoperative imaging techniques such as magnetic resonance cholangiopancreatography (MRCP), endoscopic ultrasound (EUS), and endoscopic retrograde cholangiopancreatography (ERCP) have enabled less invasive and more accurate methods for identifying and treating CBD stones. Laparoscopic CBD exploration can be performed via trans-cystic or choledochotomy approaches. In general, small distal stones are best removed via a trans-cystic approach, while large or

proximal stones may require choledochotomy. The Classical laparoscopic intraoperative CBD stone extraction method is intra- op cholangiography under fluoroscopic guidance followed by an exploration of CBD using laparoscopic instruments. Choledochoscopy on the other hand allows direct visualization of the extra-hepatic biliary tract ensuring total clearance of ducts while allowing stone extraction using a Dormia basket or balloon sweeping methods under direct vision. This advantage, combined with the lack of radiation exposure makes intra-operative choledochoscopy an attractive alternative to traditional CBD exploration.

In this case series, we successfully removed stones that could not be retrieved through ERCP. Post-procedure biochemical improvements, coupled with minimal complications, contributed to an enhanced quality of life for the patients. The advantages of choledochoscopy include real-time visualization of the biliary tree, lack of X-ray exposure, feasibility and safety. However, limitations include the requirement of a dilated common bile duct (CBD) or wide cystic duct for successful choledochoscopy. From a technical perspective, we utilized an additional 10-mm port as the fifth port and performed an adequate incision in the CBD adjacent to the cystic duct to insert the scope.

We believe that intraoperative choledochoscopy is a valuable tool for managing difficult stone cases, as it ensures thorough clearance of the biliary tract. A multidisciplinary approach is essential for the definitive treatment of this complex pathology.

CRedit authorship contribution statement

Study concept-Dr. Kugapiragash, Dr Nalaka, Data collection- Dr. Kugapiragash, Dr Aslie Interpretation- Dr Kugapiragash , Dr Nalaka, Dr Aslie , Dr Abayajeewa

Ethical approval: N/A

Consent: Data collected retrospectively

Refereance

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Case report

Resuscitative Thoracotomy After Thoracic Gunshot Wound

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Abstract:

Thoracic gunshot injuries present with variable manifestations, and treatment differs accordingly. The mortality rate following a cardiac gunshot injury is approximately 80%. Clamshell thoracotomy for thoracic injuries is an uncommon procedure performed in emergency settings. Survival rates following emergency thoracotomy are notably low: 9%–12% for penetrating trauma and 1%–2% for blunt trauma. This case report details the experience of a 31-year-old male who presented with hemorrhagic shock and respiratory compromise following a gunshot wound to the back of the chest. Despite initial resuscitation efforts, including rapid sequence intubation, bilateral chest tube insertion, and activation of a massive blood transfusion protocol, the patient developed cardiopulmonary arrest. An AMPLE history could not be obtained. A resuscitative clamshell thoracotomy was performed in the "R Room" with minimal resources. Intraoperative findings included a defect greater than 1 cm in the ascending aorta and a rupture of the left ventricle. Two-handed open cardiac massage was performed, a Foley catheter was used to occlude the larger cardiac defect, and manual compression was applied to the ascending aorta to achieve hemostasis. Despite these maneuvers and 25 minutes of resuscitation, including intravenous adrenaline and intravenous noradrenaline infusion, the patient succumbed to massive bleeding. This case underscores the challenges and limited efficacy of resuscitative measures in severe thoracic trauma with significant cardiovascular involvement.

Introduction :

Penetrating thoracic injuries pose significant challenges for thoracic teams. The presentation and management of these injuries can vary widely from case to case. It is crucial to evaluate the risk of injury to the heart, major blood vessels, and lungs through rapid clinical examination and basic monitoring. Surgical intervention should be considered as early as possible.

Clamshell thoracotomy is a life-saving procedure of last resort for patients with severe thoracic trauma. The primary goal of this intervention is to gain access to the heart or major thoracic vessels to control bleeding and manage tamponade. Despite its critical role, clamshell thoracotomy has a relatively low survival rate of approximately 7.4%. Survival rates vary significantly depending on the mechanism of injury; patients with blunt trauma generally experience worse outcomes compared to those with penetrating injuries.

For those who survive, outcomes can be favorable. Up to 86% of survivors maintain intact neurological function, and 75% can return to their normal activities.

Case report

A 31-year-old male was brought to our Accident and Trauma Unit in a peri-arrest state, exhibiting clinical signs of hemorrhagic shock following a thoracic gunshot injury. On admission, the patient was unresponsive with a blood pressure of 60/40 mmHg, a feeble carotid pulse at a rate of 126 beats per minute, cold peripheries, and unrecordable oxygen saturation on room air. The AMPLE (Allergies, Medications, Past Medical History, Last Meal, Events Leading Up to the Incident) history could not be obtained.

The patient's condition deteriorated continuously upon admission. Initial resuscitation and primary surgery were performed following a Circulation, Airway, and Breathing (CAB) approach due to the high-energy penetrating trauma to the chest.

Circulation: The patient presented with hemorrhagic shock, marked by hypotension and tachycardia. The massive blood transfusion protocol was activated, and two units of uncross-matched whole blood were administered immediately following fluid boluses.

An intravenous noradrenaline infusion was initiated. Examination revealed a gunshot entry wound at the back of the chest, in the left para-vertebral area, with no active bleeding detected. An exit wound could not be identified.

Airway and Breathing: A rapid-sequence-intubation was performed to secure the airway due to the patient's altered mental status and respiratory compromise. Bilateral lung auscultation revealed diminished breath sounds, suggestive of a large hemothorax. Immediate insertion of bilateral intercostal tubes resulted in the evacuation of more than 1 liter of blood from the left chest tube and less than 500 ml from the right chest tube.

Despite these resuscitation efforts, the patient developed cardiac arrest. Cardiopulmonary resuscitation (CPR) was administered for 10 minutes, including two cycles of intravenous adrenaline. Clinical improvement was not achieved, leading to the decision to perform a resuscitative thoracotomy in the resuscitation room.

A clamshell thoracotomy incision was made for adequate exposure, with manual rib retraction performed due to the absence of self-retaining rib spreaders. A midline sternotomy was carried out using heavy scissors. Surgical findings included over 2 liters of hemothorax with uncontrollable active bleeding. The bullet had penetrated the ascending aorta, creating a defect larger than 1 cm and causing rupture of the left ventricle. Manual compression of the ascending aorta was performed, and a Foley catheter was used to occlude the larger defect. Cardiac massage was administered using a two-hand technique. Despite these maneuvers, bleeding control was not achieved.

The patient died despite 25 minutes of resuscitation efforts and surgical intervention.



Figure 1 & 2 Clamshell Thoracotomy

Discussion

Bullet injuries are unfortunately not uncommon worldwide. Injuries to the heart or major blood vessels from gunshot wounds are often fatal. Cardiac gunshot injuries are particularly lethal owing to massive haemorrhage or cardiac tamponade. The nature and extent of the injury depend on various factors, including the properties of the projectile, the site of injury, the speed of the projectile, the presence of pericardial tamponade, injury to associated structures, and the patient's condition upon admission.

Unlike stab wounds, gunshot wounds can cause more extensive blood loss due to the jagged tearing of the myocardium. If a penetrating injury involves the heart, the chances of survival are less than 1%.

Resuscitative thoracotomy (RT) is an emergency procedure performed on patients in a peri-arrest state or those who are in established cardiac arrest, typically following trauma. Described in 1874 as a resuscitation maneuver for open-heart massage in cases of cardiopulmonary arrest, RT is best conducted by experienced surgeons in an operating theater. Guidelines on RT indicate that the Eastern Association for the Surgery of Trauma (EAST) strongly recommends RT for patients with penetrating thoracic trauma who are pulseless but still exhibit other signs of life. The clamshell incision is preferred due to its rapid and straightforward execution, providing excellent access to the heart and mediastinum. Survival rates following RT for gunshot wounds are generally higher compared to those for knife wounds.

In the present case, a 30-minute delay in admission from the time of the incident, combined with a peri-arrest state, severe hemorrhagic shock, and respiratory compromise due to bilateral hemothorax, contributed to

a poor outcome. Despite efforts to achieve hemostasis, the penetrating bullet injury, which involved a rupture of the left ventricle and a significant defect in the ascending aorta, ultimately led to the patient's death. Limitations during the "R Room" thoracotomy included challenges related to maintaining a sterile environment, the availability of experienced surgeons and well-trained staff, the lack of appropriate instruments, and the need for instantaneous decision-making. Future improvements could include enhanced training at an institutional level and better preparation and practice to address these challenges.

CRedit authorship contribution statement

Study concept-Dr. R Kugapiragash

Data collection- Dr. R Kugapiragash

Interpretation- Dr R Kugapiragash, Dr R M A S N Ranathunga

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Case report

Unveiling A Rare Presentation of WHO Grade 1 Neuroendocrine Carcinoma of the Distal Ileum Leading to Subacute Intestinal Obstruction

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Introduction

Neuroendocrine tumors (NETs) only represent 2% of all gastrointestinal malignancies. The most common sites are the appendix, ileum, and rectum. Usually, they are clinically silent, but they can cause pain, weight loss, abdominal mass, carcinoid syndrome, or perforation. These tumors generally do not become large enough to induce intraluminal obstruction.

Case Presentation:

A 38-year-old male was admitted with severe colicky upper abdominal pain accompanied by vomiting and abdominal distension for three days. He reported a history of intermittent abdominal pain over the past two months, associated with constipation. Abdominal examination revealed gross abdominal distension, tenderness in the periumbilical area, and a tympanic note on percussion, with no evidence of free fluid. A digital rectal examination yielded normal findings.

A clinical diagnosis of subacute intestinal obstruction was established. Abdominal X-rays displayed multiple air-fluid levels and dilated bowel loops. CECT abdomen revealed dilation of proximal ileal gut loops with a maximum caliber of 37mm proximal to the transit point, along with collapsed distal gut loops and jejunal loops. Enlarged lower para-aortic and right mesenteric lymph nodes, the largest measuring 2.5cm x 1.9cm, were observed, with no free fluid in the pelvis.

A diagnostic laparoscopy was performed and it revealed a malignant-appearing stricture at the ileum 30 cm proximal to the ileocaecal junction with multiple peritoneal and omental deposits (Figure 1 & 2). No liver deposits were seen. Subsequently, a midline laparotomy was performed and an obstructed bowel segment (Figure 3) with approximately 10cm margins

was resected, followed by side-to-side anastomosis.

Biopsy revealed the presence of a NET. Resection margins were free from tumor invasion, with two reactive lymph nodes identified in the mesentery. Immunohistochemistry revealed positivity for synaptophysin and chromogranin, with a Ki67 proliferative index of 1-2%. The biopsy of the peritoneal deposit also showed a low-grade neuroendocrine tumor.



Figure 1 Diagnostic Laparoscopy showing dilated bowel loops



Figure 2 Diagnostic Laparoscopy showing Omental deposits



Figure 3 Intra-operative image showing Lesion with dilated bowel loops

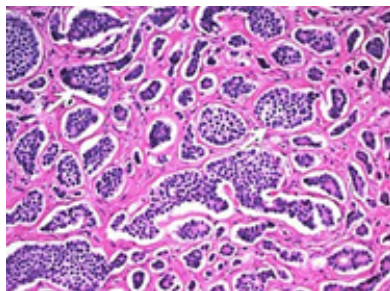


Figure 4 Nests of uniform cells with low mitotic activity

A final diagnosis of WHO Grade 1 neuroendocrine carcinoma of the distal ileum (pT4) was established (Figure 4). At one-month follow-up, the patient exhibited satisfactory recovery without any complications. The patient was planned to be followed up at the surgical clinic every three months for the first five years following surgery and then annually to assess clinically and with necessary imaging.

Discussion

The clinical manifestations of NETs can vary widely. Usually, when a young patient presents with symptoms of bowel obstruction, NET is not considered as a more likely diagnosis because bowel obstruction is not a common presenting complaint of a NET. Typically, these tumours remain clinically silent until they reach a significant size or cause obstructive symptoms due to local desmoplastic reactions or luminal narrowing.

Subacute obstruction was considered clinically and the cause for the obstruction is evaluated with CECT. CECT of the abdomen is the preferred imaging modality for assessing disease extent, identifying primary tumours, and detecting metastases. However, it's important to note that small bowel NETs can be challenging to visualize on imaging due to their small size and nonspecific radiological features.

Histopathological examination, including immunohistochemistry, plays a crucial role in confirming the diagnosis of small bowel NETs and determining tumour grade and extent of invasion. The characteristic histological features of NETs include nests of uniform cells with low mitotic activity, as observed in this case. Immunohistochemical markers such as synaptophysin, chromogranin, and Ki67 proliferative index aid in confirming neuroendocrine differentiation and assessing tumour aggressiveness. The low Ki67 proliferative index (<3%) in this case suggests a well-differentiated and indolent tumour with a favourable prognosis.

Surgical resection remains the cornerstone of treatment for localized small bowel NETs, aiming for complete tumour removal with negative margins. In this case, segmental bowel resection with side-to-side anastomosis was performed, resulting in satisfactory recovery without postoperative complications.

The prognosis of small bowel NETs is generally favourable, with long-term survival rates exceeding 80% for localized disease. However, the presence of metastases, particularly in the liver, significantly impacts prognosis and treatment outcomes. In this case, the absence of liver metastases despite peritoneal and omental deposits suggests a more favourable prognosis, consistent with the indolent nature of a well-differentiated Grade 1 tumour. However close surveillance of the patient every three to six months for the first five years following surgery and then annually is necessary to detect the recurrence of the tumour or to detect silent metastasis.

Conclusion

This case highlights the rare presentation of WHO Grade 1 neuroendocrine carcinoma of the distal ileum leading to subacute intestinal obstruction. Timely diagnosis of the cause and surgical intervention is essential for successful management, emphasizing the importance of a multidisciplinary approach involving surgeons, radiologists, and pathologists.

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Case report

Successful Reconstruction of a Defect In the Humerus Following Excision of Metastatic Deposit from Follicular Thyroid Carcinoma

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Introduction

Follicular thyroid cancer (FTC) is the second most common thyroid cancer and usually presents with a solitary thyroid nodule. Metastases outside the neck occur in 10% to 20% of patients and the most frequent locations are the lungs and bones. In the case of bone metastasis, the incidence is only 2-3%, results in pathological fractures or significant bone defects, which require prompt surgical intervention for structural stability and pain relief. One of the options for reconstructing bone defects following the excision of metastatic deposits is the use of bone grafts.

Case presentation

A 54-year-old lady, a known patient with hypertension and diabetes mellitus, presented to the surgical clinic with a complaint of left-side upper arm pain and swelling for 4 months. She also had lost some weight over the last few months and noticed a small lump on the neck which was painless but gradually enlarging in size over the last two months.



Figure 1- Metastatic deposit in the left humerus

On examination, she had a left-sided solitary thyroid nodule and a tender, hard bony lump on the proximal humerus. The other system examinations were normal. X-ray of the humerus revealed a large cystic lesion on the humerus (Figure 1). An ultrasound scan of the neck detected a suspicious nodule in the left lobe of the thyroid: USS guided FNAC performed and reported as Thy 3 lesion (Bethesda IV). CECT Neck, Chest, Abdomen, and Pelvis confirmed the cystic lesion on the mid shaft of the humerus and suspicious thyroid nodule. The MRI of the left humerus and left upper limb and arterial duplex confirmed a non-infiltrating cystic lesion in the humerus. Incision biopsy of the lesion at the humerus confirmed it as a secondary deposit from FTC. Screening for any other primary lesions was also performed and was negative.

The case was discussed at a multidisciplinary team meeting and it was planned to proceed with combined surgeries. Total thyroidectomy was performed followed



Figure 2 X-ray showing successful incorporation of the Non vascularized fibular graft

by an excision of the secondary deposit on the humerus. An anterior approach was chosen, and the deposit was excised carefully preserving the adjacent neurovascular structures. The defect at the humerus was 8cm. A lateral approach to the right fibula was made and a fibular graft was obtained. The non-vascularized fibular graft was applied to the defect and fixed with a plate. The patient had an excellent recovery and was followed up routinely in the clinic. The patient also underwent rehabilitation with physiotherapy and achieved a good range of movements of the shoulder joint. Successful incorporation of the graft with the humerus was noted in follow-up at one year (Figure 2).

Discussion

Metastatic FTC has a relatively better prognosis when compared with other forms of metastatic malignancies if they are diagnosed early. When osseous spread occurs, the axial skeleton is frequently affected, with very rare involvement of the appendicular bones. The vertebrae are the most common site of bone metastasis, followed by the ribs, pelvis, skull, and rarely, the femur and humerus.

In this case, the lesion in the humerus was confirmed from the incision biopsy as the secondary deposit from the FTC and planned for excision. Due to encouraging results and advantages such as their remodeling capacity at the donor site, low donor site morbidity, short operation time, and easy surgical technique, non-vascularized fibula reconstructions are considered a valuable treatment option for patients with reconstructions of less than 12cm with excellent functional and cosmetic results.

The complications which are very rarely encountered are peroneal nerve injury, compartment syndrome, localized muscle problems, and ankle instability. To reduce the risk of nerve damage proximally, 4 cm of fibula should be preserved. Ankle instability can be prevented by leaving a 6-8cm segment distally. In our case, none of the mentioned complications were encountered.

Conclusion

Excision of the secondary deposit can provide excellent pain relief and prevent further destruction of the long bone. The non-vascularized fibular graft is an effective method in upper extremity defects, because of the shorter surgical time and lower morbidity at the graft donor site, with an acceptable complication rate and good functional results.

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**Review Article****Short Review on Respectful Maternal Care (RMC)****Thirukumar M¹**

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Abstract:

Respectful Maternity Care (RMC) is a human rights-focused approach ensuring dignity, autonomy, privacy, and compassionate support for women during childbirth. Critical in reducing maternal and neonatal mortality, RMC emphasizes informed decision-making, cultural sensitivity, and protection against mistreatment. Despite its importance, many women experience disrespectful treatment, including abuse, neglect, and discrimination, especially in low-resource settings. Key principles of RMC—such as freedom from harm, maintaining dignity, and continuous support—promote trust and better health outcomes. Addressing factors like provider burnout, implicit bias, and inadequate empathy training, alongside organizational improvements, can foster a positive and respectful maternity care environment, benefiting both patients and providers

Keywords : Respectful Maternity Care (RMC), childbirth, human rights, dignity, autonomy, compassionate care, maternal health, neonatal outcomes

Introduction :

Respectful Maternity Care (RMC) is an approach to childbirth care grounded in respect for women's fundamental human rights, dignity, and autonomy. It focuses on providing quality, compassionate, and individualized care that protects the privacy, confidentiality, and informed choices of the mother, ensuring that her cultural preferences and values are honored. RMC involves treating women with kindness and empathy, avoiding physical or verbal abuse, ensuring the woman's right to consent or refuse interventions, and supporting her in an environment free of discrimination, coercion, or mistreatment (1).

About one-third of maternal deaths, half of the stillbirths, and a quarter of neonatal deaths are due to complications during labour and childbirth (2,3). Most of these deaths occur in low-resource settings and are avoidable by improving the quality of intrapartum care. RMC is a critical component of providing safe, good-quality care and is the most impactful strategy for reducing stillbirths, and maternal and newborn deaths (4,5).

RMC is essential for a positive childbirth experience, organized in a manner that maintains women's dignity,

privacy, and confidentiality, ensures freedom from harm and mistreatment, and enables informed choice and continuous support during labour and childbirth (6,7). At its core, respectful care encompasses twelve domains, with dignity as a central aspect, involving the treatment of patients with inherent respect and the recognition of their intrinsic worth, which fosters trust and a positive therapeutic relationship (8).

The therapeutic relationship between a maternity care provider and a woman during childbirth is vital to both the woman and her family (5). Empathy, support, trust, and effective communication are essential for enabling informed decision-making (9). Unfortunately, many women experience disrespectful, abusive, or neglectful treatment during childbirth (10).

Strategies to reduce maternal mortality rates (MMR) have emphasized the need for skilled birth attendance at health facilities and the enhanced utilization of existing facilities (12). The lack of RMC leads to the underutilization of maternal health services, as disrespectful and abusive care (D&A) practices discourage women from seeking care, which contributes to poor maternal and neonatal outcomes (12). RMC plays a pivotal role in achieving the

Sustainable Development Goal (SDG) target of reducing the global MMR to less than 70 per 100,000 live births by 2030 (13).

Burden of Disrespect and Abuse

Disrespect and abuse of women during maternity care are urgent problems that span healthcare research, quality of care, and human rights advocacy (6). The experiences of disrespect, mistreatment, and abuse in healthcare institutions—especially in vulnerable populations—highlight a failure in health systems and a violation of women's rights (10).

Disrespectful Maternity Care in South Asia and Sri Lanka

In South Asia, including Sri Lanka, women often experience disrespectful and abusive treatment during the perinatal period. These negative experiences have adverse effects on maternal and neonatal health outcomes (7).

Forms of Disrespect and Abuse

1. Verbal Abuse: Harsh language or derogatory comments.
2. Physical Abuse: Slapping, rough handling, or unnecessary restraint.
3. Non-Consented Care: Procedures performed without informed consent.
4. Neglect and abandonment: Being left unattended during labor.
5. Discrimination: Differential treatment based on socioeconomic or ethnic factors (5,11).
6. Lack of Privacy and Confidentiality: Public discussion of personal information (6,112).

Contributing Factors

1. Limited resources: Healthcare facilities that are overcrowded and understaffed (8,12).
2. Cultural Norms: Hierarchical and patriarchal structures influencing provider-patient dynamics (9).
3. Lack of accountability: Inadequate enforcement of patient rights (10).
4. Training Gaps: Insufficient training in compassionate, respectful care (8).

Impact on Maternal and Neonatal Health

Disrespectful care leads to maternal stress, reluctance to seek care, and adverse birth outcomes. It erodes trust in healthcare systems, which is crucial for timely maternal care (6). In contrast, respectful care enhances maternal satisfaction, fosters trust, and contributes to better health outcomes (9).

Principles of Respectful Care

Respectful maternal care encompasses twelve key components:

1. Being free from harm and mistreatment
2. Maintaining privacy and confidentiality
3. Preserving women's dignity
4. Providing prospective information and seeking informed consent
5. Ensuring continuous access to family and community support
6. Enhancing quality of the physical environment and resources
7. Providing equitable maternity care
8. Engaging in effective communication
9. Respecting women's choices that strengthen their capabilities to give birth
10. Availability of competent and motivated human resources
11. Provision of efficient and effective care
12. Continuity of care (13).

Disrespectful Behavior of Healthcare Providers

Healthcare providers may unintentionally engage in disrespectful behaviors due to burnout, stress, dehumanization of patients, hierarchical power structures, and implicit biases (9,12). Factors like compassion fatigue, cognitive dissonance, and moral disengagement may also contribute to these behaviors (8). Interventions such as stress management, empathy training, and promoting a positive workplace culture can reduce these issues and foster more compassionate care (6).

Respectful Communication in Intrapartum Care

Effective communication and engagement among health care providers, health service managers, women, representatives of women's groups, and women's rights movements are essential to ensure that care is responsive to women's needs and preferences in all

contexts and settings (7,11). Interventions should aim to ensure a respectful and dignified working environment for those providing care, acknowledging that staff may also experience disrespect and abuse in the workplace and/or violence at home or in the community (13).

Measures to Minimize Disrespectful Behavior

There is limited evidence on the effectiveness of interventions to promote RMC or to reduce mistreatment of women during labour and childbirth. Given the complex drivers of mistreatment, reducing mistreatment and improving women's experience of care requires interventions at the interpersonal level between a woman and her health care providers, as well as at the level of the health care facility and the health system (4,9).

There are several strategies that healthcare staff can implement to reduce disrespectful behavior and enhance respectful practices:

1. Addressing Burnout and Stress: Stress management programs and promoting work-life balance, supportive supervision, and counseling.
2. Fostering Empathy and Compassion: Empathy training and reflective practice, encouraging staff to focus on patient-centered care (10,12).
3. Promoting a Positive Workplace Culture: Clear behavioral expectations, modeling respectful behavior, and recognition programs for compassionate care (11).
4. Enhancing Communication and Teamwork: Regular team meetings and conflict resolution training (5,9).
5. Combating Implicit Bias: Bias awareness training and promoting diversity and inclusion (10,13).
6. Supporting Moral Engagement: Ethical training and encouraging accountability (7,12).
7. Improving Organizational Policies: Regular assessment of workplace culture and establishing clear reporting mechanisms for disrespectful behavior (8).
8. Encouraging Professional Growth and Self-Care: Wellness programs and mentorship opportunities for new staff (4,13).

By addressing these factors, healthcare systems can create a respectful, empathetic, and supportive environment for both patients and staff (13).

Conclusion

Respectful maternal care is not only a human right but also essential for improving maternal and neonatal health outcomes. Healthcare settings globally must prioritize efforts to minimize disrespectful behaviors and enhance respectful practices to ensure dignified care for all women.

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**Review Article****Community Involvement and Engagement (CIE): A Pathway to Equitable and Effective Healthcare****N. Shobana¹**

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Abstract:

Community Involvement and Engagement (CIE) is crucial for sustainable health outcomes, fostering shared responsibility between health systems and communities. This review examines CIE's role in health, the challenges, and effective strategies to overcome these barriers. It explores various models and theories of CIE, noting that while these models demonstrate success in fostering equitable engagement, no single approach guarantees universal effectiveness. Strategies must be tailored to specific contexts, with an emphasis on building genuine partnerships, establishing community trust, and employing participatory methods. The review underscores the importance of CIE for achieving equitable and effective healthcare.

Community participation in health and development is now widely recognized as an essential component in achieving sustainable health outcomes. Community involvement spans all stages in the health sector—promotion, prevention, treatment, and rehabilitation. This approach aligns with the global movement towards recognizing health as a shared responsibility between health systems and communities. The Alma-Ata Declaration of 1978, formally acknowledged the role of community participation as a cornerstone of primary healthcare delivery (1). This declaration catalyzed global health systems to recognize the basic health needs of populations, particularly in developing countries, that could only be met through the active participation of local communities.

Historically, the power of community mobilization in addressing health crises has been well-documented. During the malaria epidemic of 1934-1935 in Sri Lanka, which affected over a million people and caused more than 125,000 deaths, the Suriya Mal Movement was instrumental in delivering essential care (2). This movement, driven by local volunteers, highlighted the power of community engagement in managing large-scale health emergencies.

Under the Universal Health Coverage framework, Policy Priority Area 4.4 emphasizes citizen engagement

and empowering the community in rational health-seeking behavior. Strategic Direction 5.10 focuses on altering demand through improved citizen engagement and health empowerment, while Implementation Measure 7.9 aims to foster citizen engagement and participatory mechanisms to ensure that developments are client- and community-centered (3).

Aligned with contemporary health policy priorities, Sri Lanka's Primary Health Care System Strengthening Project (PSSP) represents a significant evolution in the country's healthcare approach. A key strategy of the PSSP is the introduction of "Friends of Facility" Committees in Primary Medical Care Institutions (PMCIIs) (2). These committees institutionalize community participation by establishing formal structures that allow local stakeholders to contribute to the governance and enhancement of healthcare facilities, thereby advancing community-centered health improvements.

A community is typically defined as a group of people who share common characteristics, interests, or circumstances, whether it be based on geographical location, race, ethnicity, age, occupation, or shared challenges like health needs or social disadvantages (4). **Involvement** refers to the active participation of community members in decision-making, planning, and

implementation processes, particularly within research, healthcare, or development initiatives. It signifies a more hands-on approach, where community members have a say and actively contribute to the outcomes (5,6). On the other hand, **engagement** is the broader, ongoing process of building relationships, communication, and collaboration between organizations or researchers and the community. It focuses on creating meaningful connections and partnerships to ensure the community's voice is heard, aiming to work collaboratively on issues that impact their well-being (4,7). While involvement is about active roles, engagement emphasizes sustained interaction and mutual influence.

Theories of **Community Involvement and Engagement (CIE)** provide a framework to understand how communities can effectively participate in decision-making and collective action. One prominent theory is Arnstein's Ladder of Citizen Participation, which outlines varying levels of public involvement, from passive participation at the bottom (manipulation and tokenism) to active, empowered engagement at the top (partnership and citizen control) (8,9). Empowerment Theory focuses on enabling communities to gain control over their environment and resources, leading to increased agency and self-efficacy. Asset-Based Community Development (ABCD) Theory shifts the focus from deficiencies to the strengths and assets within a community, encouraging communities to build upon their existing resources and capacities (10). By leveraging local skills, knowledge, and networks, ABCD fosters sustainable development and long-term engagement. Community-Based Participatory Research (CBPR) promotes collaboration between researchers and communities, emphasizing shared power, co-learning, and mutual benefit (11). These theories help in the strategy design, and ensure the involvement of community members, empowering them to influence outcomes with sustained engagement.

Over the decades, there has been much exploration, development, and debate on ways to conceptualize meaningful community participation in health services. Beyond enhancing program effectiveness, effective community engagement is believed to positively influence social capital, strengthen community empowerment, and ultimately improve health outcomes and reduce inequalities (12). By involving community members in the planning, implementation, and evaluation steps of health initiatives, CIE ensures that these programs are tailored to the specific needs, preferences, and cultural contexts of the target

population. This approach helps bridge gaps between healthcare providers and the community, fostering trust and improving health service delivery. Engaged communities are more likely to embrace and adhere to health interventions, leading to better health outcomes. Additionally, CIE empowers individuals and groups to take an active role in their own health, promoting self-efficacy and resilience. It also helps in identifying and addressing local health challenges, leveraging community assets, and building social capital, which can enhance overall health and well-being. CIE contributes to a more equitable, responsive, and effective health system, through prioritizing the community's input.

Community Involvement and Engagement (CIE) face several challenges impacting their effectiveness and sustainability, especially in low- and middle-income countries like Sri Lanka. Despite the guidelines in place under Sri Lanka's National Health Policy, numerous barriers hinder the enhancement of CIE through public awareness and Grievance Redress Mechanisms (GRM). Diverse community needs, make consensus difficult, while power imbalances can marginalize certain voices (7). Sustaining long-term engagement is often hindered by fluctuating interest and limited resources. Building trust requires time, especially where past negative experiences foster skepticism. Cultural differences, language barriers, and resource constraints further complicate efforts. Measuring CIE impact is challenging, requiring both qualitative and quantitative evaluation (12,13). Resistance to change from community members or health professionals can also impede progress.

Various evidence-based strategies have been employed to address the challenges faced in CIE. A key approach is fostering genuine partnerships between researchers and communities, transitioning from consultation to true collaboration, as emphasized by INVOLVE and the NIHR (14). These strategies help build trust, address power imbalances, and integrate community voices into decision-making. In Sri Lanka's Global AF project, culturally sensitive outreach and capacity-building workshops effectively overcame challenges related to limited resources and cultural differences (15).

Models like Community-Based Participatory Research (CBPR) have been particularly successful in addressing health disparities through equitable engagement and knowledge exchange (16). CBPR, often aligned with participatory action research, effectively bridges the gap between research and practice by engaging

communities at every stage of the research process. Various models have demonstrated success in fostering community participation, such as the ANGELO model's community validation through prioritization, the FOCUS model's asset-building approach to improve health literacy, and the CDC model's participatory health communication strategies, where community health workers (CHWs) played a critical role in recruiting, training, and retaining marginalized groups within health programs (7,17). However, while models like FOCUS, ANGELO, and CDC share the goal of community engagement, they often lack key CBPR components, such as comprehensive community involvement and balancing research with actionable outcomes (18). This variation across models underscores the absence of a one-size-fits-all approach to community participation that guarantees success. CIE strategies must be tailored to the specific context to ensure equitable healthcare delivery and to optimize health interventions.

In conclusion, community participation is a fundamental element of an equitable and rights-based approach to health, proving to be essential in optimizing health interventions for positive public health impact. This review highlights the considerable evidence supporting the effectiveness of community involvement in achieving favorable outcomes across diverse health domains. To make Community Involvement and Engagement (CIE) more effective, genuine collaboration, contextually tailored strategies, and leveraging local assets are critical. The study recommends integrating community voices into health planning and delivery, fostering more effective and sustainable interventions that improve health outcomes and equity.

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Quiz Answers

Quiz 1

Answer: C

Achalasia is an uncommon disorder of the oesophagus diagnosed usually in patients between 25 to 60 years. Achalasia cardia results from idiopathic progressive denervation of ganglion cells in the myenteric plexus of the oesophageal wall leading to lower oesophageal sphincter relaxation failure. Chronic dysphagia for solids and liquids and regurgitation of bland undigested food or saliva are the most common symptoms. Other symptoms include heartburn, chest pain and difficulty belching. Diagnosis is made by upper gastrointestinal endoscopy, timed contrast swallow and oesophageal manometry. A Tight, non-relaxing gastro-oesophageal junction, dilated oesophagus with signs of chronic stasis abnormal contractions and failed peristalsis are demonstrated by these tests. Endoscopic per-oral myotomy (POEM) is the treatment of choice in suitable patients. Endoscopic balloon dilatation, Botox injection and surgery are other treatment options available.

Quiz 2

Answer B

Ebstein anomaly is a congenital malformation of the heart that is characterized by apical displacement of the septal and posterior tricuspid valve leaflets, leading to atrialization of the right ventricle with a variable degree of malformation and displacement of the anterior leaflet. The atrialized portion of the right ventricle, although anatomically part of the right atrium, contracts and relaxes with the right ventricle. This discordant contraction leads to stagnation of blood in the right atrium. During ventricular systole, the atrialized part of the right ventricle contracts with the rest of the right ventricle, which causes a backward flow of blood into the right atrium, accentuating the effects of tricuspid regurgitation.

Severe forms of Ebstein anomaly present soon after birth with cyanosis and fatal right heart failure as soon as the ductus closes, while mild forms present later in life with transient cyanosis. It is associated with accessory pathways, leading to Wolf-Parkinson-White syndrome with episodes of palpitation or supraventricular tachycardia. Fatal ventricular tachycardias also have been reported.



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