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CONTENTS

Editorial
Meritocracy and competent leadership

Meritocracy, and its merits and demerits, are much of the talk in the recent past. Sri Lanka with an unstable political and economic background the topic keeps on surfacing.

As a principle, meritocracy speaks to fairness, equal opportunity, and the promise of social mobility. In general, meritocracy refers to the notion that individuals are appointed (or promoted) to positions based on their ability to do the job, and not because of their family background, ethnicity, age, gender, or national origin. In this context, the idea is that the best person will rise to the top based on expertise, ability, and achievement overruling the aspects of status, connections, and favour. Meritocracy delivers a government where people of education and ability – who display either academic or professional merit – are selected for positions of authority.

It is now commonplace that the ideas which have shaped and sustained western societies for the past 250 years or more are faltering. Democracy is in retreat. Liberalism is struggling. Capitalism has lost its lustre. But there is one idea that still commands widespread enthusiasm: that an individual's position in society should depend on his or her combination of ability and effort. Meritocracy, a word invented as recently as 1958 by the British sociologist Michael Young, is the closest thing we have today to a universal ideology.

The definition of the word gives us a sense of why meritocracy is so popular. A meritocratic society combines four qualities which are each in themselves admirable. First, it prides itself on the extent to which people can get ahead in life based on their natural talents. Second, it tries to secure equality of opportunity by providing education for all. Third, it forbids discrimination based on race, gender, colour, religion, and other irrelevant characteristics. Fourth, it awards positions through open competition rather than patronage and nepotism. Social mobility and meritocracy are the strawberries and cream of modern political thinking, and politicians can always earn applause by denouncing unearned privilege. Meritocracy's success in crossing boundaries – ideological, cultural, geographical and political is a result of those four qualities.

Nepotism and politics have historically been together supporting each other; there's hardly any nation that can claim to have abolished that deep-rooted relationship in full. Equal playing fields are a far-fetched dream, especially in this part of the world. One's

connections, influence, and status are of consequence in all matters of life – even when gaining entry to schools or being selected for plum corporate jobs.

If one word could describe today's world, it would be “dynamic” and that dynamism requires everyone to be able to review, adapt, and realign themselves to change with the constant changes and uncertainties in the environment. Multidisciplinary would be the most important trait for leaders in the future. Everyone has multiple talents and motivations and can learn and hone them through experience in many roles. Great innovations and designs happen when people have well-rounded skills and knowledge and the ability to apply them to solve problems with creativity and empathy.

Competent leadership is not just the domain of knowledge, but also the ability to lead, manage, and inspire others to achieve shared goals. Introducing business leaders to public sector roles brings in private sector thinking and work style from the very top. This is a preferred combination as it will translate into more confident evaluated risk-taking, the exploration of new possibilities and opportunities, new collaborations, and better fiscal discipline in the organisation. The challenge for today's leaders is to grasp the scale and complexity of government and harness entrepreneurial skills to stimulate growth and channel results.

Today's public service desperately needs to absorb an entrepreneurial mindset and that is what a functioning meritocracy should deliver. As the tone from the top trickles down to the next layers of public servants, the need is to energize and stimulate talent and innovation to offer public servants a chance of reaching their potential in a system that rewards ability and results, and not just seniority.

In the final equation, meritocracy must find peaceful co-existence with Sri Lanka's democracy; neither system is perfect but if the result of our newly minted awareness of meritocracies translates into merit-based voting, then we are onto an empowered public using their democratic right to demand that its leaders are hardworking, competent individuals of integrity and therefore, deserving of their vote by merit. Time will tell.

Presidential Message
Dr. Asela Gunawardene, President CMASL

It is an honour to be the 28th President of this prestigious college of Medical Administrators Sri Lanka and deliver my message to this scientific journal. I have pledge as a president to be a leading college that contributes to improve the health system in Sri Lanka and to develop the members towards a competence personal to steer the health system in Sri Lanka.

We are currently in trouble waters that we face dual burden of COVID-19 pandemic and economic recession. We are also in a era that continuous technological destruction with another technology replacement taking place, which is called the 4th Industrial Revolution. With this context scientific incorporation into health system is vital to overcome challenges as well as to deliver safe, quality, efficient and effective healthcare deliveries to our people of this nation. It is vital to incorporate evidence-based practices to achieve quality of care in a productive manner, without financial burden to our people and to the health system.

Research produces scientific evidence that pave pathways to improve health systems. This journal book enables the scientist to showcase their scientific findings. This journal book has been given recognition by publishing online through the Sri Lanka Online Journal. As president, I would like to encourage my fellow members to conduct more research that generate new findings and evidence, which could be incorporate for health system improvement. We all take hand in hand to establish a research culture among our specialities.

I would like to take this opportunity to congratulate the editorial board for their dedication in producing this scientific journal. I also like to congratulate the authors who have published their scientific findings in this journal. I wish all the best for all the contributors to the Journal of College of Medical Administrators Sri Lanka.

Thank you.

Dr. Asela Gunawardena
President
The College of Medical Administrators
Sri Lanka

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Council of the College of Medical Administrators of Sri Lanka
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Knowledge, attitudes, and practices of COVID-19 management among nursing officers at Base Hospital Homagama, Sri Lanka

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Abstract

Introduction: The COVID-19 outbreak challenges health systems and their ability to effectively manage public health emergencies. Nurses are not only at the forefront of the fight against this highly contagious disease but are also directly or indirectly affected by it.

Objective: To describe the knowledge, attitudes, and practices of COVID-19 management among nursing officers at Base Hospital Homagama

Methodology: A cross-sectional descriptive study was carried out among nursing officers at Base Hospital Homagama. All nurses were taken into the study. A pre-tested self-administered questionnaire was used to collect data. Knowledge, attitudes, and practices were categorized into good and poor according to cut-off values decided by experts in relevant fields. Data analysis was done using the SPSS statistical package.

Results: Response rate for the study was 96% (232). Among them, 220 (94.8%) were females while 12 (5.2%) were males. The majority of nurses had only a nursing diploma (215, 92.7%) while the rest had a BSc or MSc (17, 7.3%). Most nurses had good knowledge of COVID-19 management (201, 86.6%) while the rest had poor knowledge. Eighty-two percent (190) nurses had good attitudes toward COVID-19 management and almost all had good practices on COVID-19 management (223, 96.1%).

Conclusion: Most of the nurses at Base Hospital Homagama had good knowledge, attitudes, and practices on COVID-19 management.

Introduction

Healthcare workers (HCWs) are at the frontline of the COVID-19 pandemic fight and are exposed to dangers like pathogen exposure, long working hours, psychological distress, fatigue, occupational burnout, and stigma [10]

A poor understanding of the disease among HCWs can result in delayed identification and treatment leading to the rapid spread of infections. Over 100 healthcare workers have lost their lives to COVID-19. However, a study with the majority of Asian HCWs revealed that they had insufficient knowledge about COVID-19 but had a positive attitude toward the prevention of COVID-19 transmission [11]

Justification

The COVID-19 pandemic challenges health systems and their ability to effectively manage public health emergencies. HCWs are not only at the frontline of the fight against this highly infectious disease but are also directly or indirectly affected by it. It is therefore important to have adequate knowledge about all aspects of this disease. Nursing officers are directly involved in patient management and infection control. Their activities restore health and save lives.

Base Hospital Homagama, Sri Lanka functioned as a COVID-19 treatment center

since the end of March 2020. Within a short period, it had to transform from its routine functions to a COVID-19 treatment center. During this transformation, it had to face many obstacles creating the need to upgrade knowledge, attitude, and practices among the healthcare workers. This research is a step towards identifying gaps and providing solutions with the goal of giving the best possible care to the patients.

Objective

To describe the knowledge, attitudes, and practices of COVID-19 management among nursing officers at Base Hospital Homagama, Sri Lanka

Methodology

A cross-sectional descriptive study was carried out to describe the knowledge, attitudes, and practices of COVID-19 management among nursing officers at Base Hospital Homagama, Sri Lanka.

Study setting

Base Hospital Homagama has the second highest catchment population in Sri Lanka and is the only tertiary care institution between Avissawella District General Hospital and Colombo South Teaching Hospital. With the COVID-19 pandemic, Base Hospital Homagama was designated as one of the hospitals treating only COVID-19-diagnosed patients.

Study population

The study population consisted of nurses working at Base Hospital Homagama Sri Lanka**.** The total number of nurses at Base Hospital Homagama was 281. Therefore, all nurses in Base Hospital Homagama were selected for the study.

Inclusion criteria

A nurse who was working in Base Hospital Homagama, Sri Lanka.

Exclusion criteria

A nurse who was on maternity leave or other special leave for more than three months' duration.

Study period

June 2020- April 2021

Preparation of the study instrument

The instrument was a self-administered questionnaire with four parts. It was administered in the Sinhala language as all nurses in Base Hospital Homagama could read and write in the Sinhala language.

Pre-test of the questionnaire

The questionnaire was pre-tested in Colombo East Base Hospital to assess the validity and feasibility of administration. The necessary alterations were done following the pre-test. Five practical issues were encountered

during its administration.

Investigation team

The investigation team was composed of four medical officers and the principal investigator. Data collection was supervised by the principal investigator himself in the field.

Method of data collection

Permission for the study was obtained from the hospital administration. Investigators were introduced to the nurses and explained to them the objectives and purpose of the study. After obtaining informed consent the questionnaires were distributed among the nurses. Every step was taken during all the above procedures to minimize the disturbances to the routine ward work.

Data management and analysis

During the collection of the filled questionnaires, each one was examined for its completeness. If found to have any missing data, it was attended to at that point itself. Data analysis was done using the SPSS statistical package. The relationship between the associated factors was analyzed using statistical tests such as the Chi-square test.

Ethical and administrative considerations

Permission was sought from the respective authorities. Ethical clearance for the study was obtained from the Ethical Review Committee of the University of Sri Jayewardenepura.

Results

The response rate of the study was 96%. Analysis of the study population showed that the majority consisted of females (94.8%%) and the male: female ratio was approximately 1:19. Most of the nurses had only a diploma (92.7%) while five nurses (2.2%) had MSc qualifications or above. Almost all nurses had training on Personal Protective Equipment (PPE). Most of them were trained at the Base Hospital, Homagama (88.4%) while eleven nurses had training in several places. However, six (2.6%) nurses had no training at all on PPE. More nurses were working in the operation theater (17.2%) or the preliminary care unit (14.7%) compared to the OPD (0.9%) and the PBU (2.1%). Many other places except for ward 11 had more than 10 nurses.

When the demographic characteristics were concerned it was found that most of the nurses had households with members over 60 years of age (57.8%). About 33% of nurses had households with members having immune-compromised disease conditions.

Most of the nurses had good knowledge about COVID-19 management (86.6%) while only 31 (13.4%) nurses had poor knowledge. About eighty percent of the nurses had good attitudes toward COVID-19 management while 18 percent had poor attitudes toward the same. Almost all nurses

(96.1%) had good practices in COVID-19 management while only nine had poor knowledge about COVID-19 management.

The prevalence of knowledge, attitudes, and practices in relation to nurses' education level is given in table 1.

Knowledge (p=0.346), attitudes (p=0.956), or practice (p=0.656) on COVID-19 management did not significantly associate with nurses' education.

Discussion

Most of the nurses had good knowledge, attitudes, and practices on COVID-19 management. The main reason for such attributes might be the fact that the Base Hospital Homagama functioned as a COVID-19 treatment center from the beginning of the COVID-19 pandemic. Most of the study population had nursing diplomas only (92.7%). Although the knowledge and the practices on COVID-19 management were comparatively better in the high-education group good practices were observed more in the diploma group. However, there was no statistically significant association with the nurses' education level. The reason for that might be the fact that all nurses received training and education on COVID-19 management irrespective of their level of education at the beginning of the pandemic. Therefore, it can be the same reason for most of the nurses irrespective of their education level having good knowledge, attitudes, and practices on COVID-19 management.

Almost all nurses received PPE training at least in a single institution. Most of them were trained at the Base Hospital, Homagama (88.4%) while eleven nurses had been trained in other training centers. However, 6 (2.6%) nurses had no training at all on PPE. That might be because some nurses were not directly involved with patient management due to their illnesses and other personal reasons. So, they did not require to wear PPE and in that sense, they did not need

Table 01. The prevalence of knowledge, attitudes, and practices in relation to nurses' education

COVID-19 Management	Diploma No.	%	Above diploma No.	%	Significance
Knowledge Good					χ^2=0.886
Poor	185	86.0	16	94.1	df = 1
	30	14.0	1	5.9	p=0.346
Attitudes					χ^2= 0.0026
Good	176	81.9	14	82.4	df = 1
Poor	39	12.1	3	17.6	p=0.956
PracticesGood					χ^2= 0.197
Poor	207	96.2	16	94.1	df = 1
	8	3.8	1	5.9	p=0.656
Total	215	92.7	17	7.3	

training on PPE.

Since most of the nurses had high-risk members in their households, they had to be extra cautious by taking preventive measures with better knowledge of pathology and its prevention.

As it was a self-administered questionnaire, the responses might not have reflected the actual attitude and practices and it would have been biased. Another limitation was that the majority of the study population consisted of females. The male: female ratio was approximately 1:19 as there were fewer male nurses in the sample. However, since it is consistent with the usual male: female ratio of nurses in Sri Lanka, it can be assumed that the sample of this study represented the Sri Lankan nurses population.

Conclusions and Recommendations

Most of the nurses have good knowledge, attitudes, and practices on COVID-19 management. However, interventions that help to improve knowledge, attitudes, and practices on COVID-19 management are necessary to sustain these attributes. Therefore, regular training for healthcare workers to update them about new guidelines and developments on COVID-19 will be an imperative strategic measure to effectively control and prevent future outbreaks in Sri Lanka.

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An assessment of knowledge on the public procurement process among health sector officials in Matale district, Sri Lanka

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Abstract

Introduction: Health sector utilizes a significant portion of public funds to acquire infrastructure, drugs, consumables, and services. Therefore, to achieve the best value for money the officials should possess a thorough knowledge of procurement procedures.

Objective: To assess the knowledge on the public procurement process among the officials involved in procurement activities in the health sector of Matale district.

Methodology: A descriptive cross-sectional study was conducted in the office of the Regional Directorate of Health Services, the District General Hospital Matale, and the Base Hospital Dambulla in Matale district during the year 2021. All officials involved in public procurement were included. A self-administered structured questionnaire consisting of 50 knowledge-assessing questions in eight domains was consensually validated through a modified Delphi technique and utilized after pretesting.

Results: Out of 29 officials, 22 (75.9%) responded. The majority (41%) were technical evaluation committee members. The overall knowledge score was 66 percent (95% CI 62.6-69.5: Range 48%-83%). It was an "above-average" level. The highest score was obtained for the knowledge domain of evaluating bids (Mean=82%). The lowest score was obtained for procurement objectives and ethics (Mean=45%). Officials at Dambulla Hospital (Mean=70.2%) and males (Mean=70.3%) scored high scores. Opinions on knowledge-sharing culture (F=5.053, p=0.017) and experience-sharing culture (F=4.146, p=0.032) were statistically associated with knowledge scores at a 95% confidence level.

Conclusion and Recommendation: Knowledge among the officials on the procurement process was above average. Factors related to less knowledge among females and less knowledge on procurement objectives and ethics should be investigated and corrected. The involvement of top management to strengthen knowledge and experience-sharing culture is recommended as those domains are significantly associated with the acquisition of knowledge in the procurement process.

Key Words: Knowledge of Public Procurement, Public Procurement Process, Health Sector Procurement

Introduction

Public procurement is simply defined as a process of acquisition of goods, works, and services by public institutes to strengthen infrastructure and human capital to lay foundations for national development[1]. From an economic point of view, public procurement is a factor that considerably affects Gross Domestic Product (GDP)[2]. The Sri Lankan government's capital expenditure in 2019 was around 4.1 percent of GDP and,

as a value, was around Rs.614.1 billion. The usage of budgetary allocations for capital expenditure was 83.5 percent; the rest were unutilized due to procurement process delays[3]. It shows that improper procurement management can hinder the country's economic development.

The absence of adequate knowledge in the procurement process can cause grave consequences including breaches of ethics and rules of law[4]. A procurement assessment report published by the World Bank[5] highlights that most procurement activities are carried out by general engineering and accounts cadres, and they often do not have proper training in the field of procurement. It was found that the integration of sustainability concepts in the process of goods procurement was unsatisfactory in the office of the Provincial Director of Health Services in the Central Province[6]. It is observed that most academics have failed to identify public procurement as an important area for research and education[7]. Therefore, it is a timely requirement to carry out a study to assess whether the public officials of the health sector have adequate knowledge of the procurement process.

Objective

To assess the knowledge on the public procurement process among officials involved in procurement activities in the public health sector of the Matale district.

Methodology

A descriptive cross-sectional study was conducted in the office of the Regional Directorate of Health Services (RDHS) Matale, District General Hospital (DGH) Matale, and Base Hospital (BH) Dambulla from 1st September to 31st of January 2022. Officials involved in the public procurement of the above institutes were recruited for the study. Officials appointed after 1st January 2021; officials who worked for less than 3 months before 1st January 2021, and clinical specialists were excluded. Since the number of officials involved in procurement activities was less than the calculated sample size (384)[8], the total study population was included in the study.

A self-administered, structured questionnaire consisting of three parts was developed. Part A collected socio-demographic data and information related to individual factors affecting the knowledge, Part B collected perceived institutional factors affecting the knowledge, and Part C assessed the knowledge. Relevant literature[1,9-12] was identified and referred by the investigators with the consultation of a panel of three medical administrators having postgraduate qualifications in public procurement, to prepare the questionnaire. The questionnaire was consensually validated through a modified Delphi technique by inviting 15 experts in public procurement having five years of experience in the field. Pre-testing of the questionnaire was done at BH Theldeniya in the Kandy district and changes were made accordingly. Ethical clearance was obtained from the Ethics Committee of the National Hospital, Sri Lanka. Administrative clearance was obtained from the Provincial

Director of Health Services, Central Province.

It was assured that sharing physical objects or conducting physical interviews did not happen due to the COVID-19 pandemic. The anonymous data collection was done by administering the questionnaire through Google forms, and explanations about the study were done over the phone.

After cleaning the data, descriptive analysis was performed initially, and then inferential analysis to determine the knowledge level among different categories and factors affecting knowledge. The statistical analysis was carried out by consulting a statistician.

Results

The response rate in the 1st round of the modified Delphi technique was 66.67 percent (n=10) and 60 percent (n=9) in the 2nd round. Based on the expert opinion, 50 items were selected for Part C of the questionnaire. Knowledge of procurement was measured in eight dimensions (Table 01).

The total response rate was 75.9 percent (n=22, N=29). Of them, 54.5% percent, (n=12) were from DGH Matale; 27.3 percent (n=6) were from RDHS Office Matale, and the rest 18.2 percent (n=4) were from BH Dambulla. There were 12 (55%) females and 9 (41%) males, and one respondent selected the response "prefer not to mention the gender". The mean age of the participants was 44.77 years. Most participants were technical evaluation committee members (n=9, 41%). There were 36 percent (n=8) procurement planners, 27 percent (n=6) bid opening committee members, 14 percent (n=3) procurement assistants, and 9 percent (n=2) procurement committee members. It was found that three respondents were procurement committee members for the appointed institute and technical evaluation committee members for some other institutes.

The majority (31.8%, n=7) had obtained a postgraduate degree. Of the rest of the respondents, 22.7 percent (n=5) had passed GCE Advanced Levels, 13.6 percent (n=3) had a Diploma, 27.3 percent had a degree, and one (4.5%) had a doctorate level qualification. Only two respondents (9%) had academic qualifications in public procurement. One had a Diploma in public procurement and contract administration, and another respondent had a certificate course in public procurement. About 54.5 percent (n=12) of the respondents had not participated in any in-service training programs. The mean years of experience in public procurement were 4.59 (95% CI, 3.24-5.94), and the mean years of experience in the public sector were 17.59 (95% CI, 14.16-21.02).

The level of knowledge of the public procurement process

Descriptive statistics of the scores on eight knowledge dimensions are shown in Table 1.

The overall knowledge score was 66 percent. (95% CI, 62.6%-69.5%). Kruskal-Wallis H test which was used to assess the difference among institutions as the sample size was less than 30 and the distribution was skewed,

Table 1: Descriptive Statistics of the scores in eight knowledge dimensions

Dimensions	Statistics		BH Dambulla	DGH Matale	RDHS Office Matale	Comparison across institutions	
	Mean Knowledge score % of the sample	Standard Deviation	Mean Knowledge score %	Mean Knowledge score %	Mean Knowledge score %	Kruskal-Wallis H	Sig. df=2
1. Procurement Objectives and Ethics	45	0.180	42	47	42	1.130	0.568
2. Duties and responsibilities of procurement entities and procurement committees	50	0.170	54	49	50	0.221	0.895
3. Procurement methods	63	0.180	70	55	73	5.043	0.080
4. Procurement planning	70	0.150	69	65	83	6.169	**0.046**
5. Preparation of bidding documents	72	0.110	79	70	71	1.740	0.419
6. Inviting bids, closing, and opening of bids	68	0.180	83	63	70	6.030	**0.049**
7. Evaluation of bids	82	0.170	79	81	86	0.968	0.616
8. Awarding of contracts and contract administration	78	0.170	86	74	80	1.585	0.453

indicated that two dimensions of knowledge, namely, the "Procurement planning" and "Inviting bids, closing and opening of bids" were different and the difference was statistically significant at a 95% confidence level, as the corresponding probability value is less than 0.05. On both occasions, DGH Matale scored the lowest values.

Comparison of the level of knowledge among different categories of officials

The knowledge was high among males (mean=70.3%) compared to females (mean=62.9%) but there was no statistically significant difference (F=3.37, p=0.08). The officials overseeing procurement had the highest knowledge (76%) followed by procurement committee members (68%). The lowest knowledge (61.8%) was found among assistants in the preparation of bid documents.

Determining the factors affecting the level of knowledge

Data on individual factors such as age, level of education, gender, academic qualifications, extra time available to acquire knowledge, perceived importance of acquiring knowledge, personal satisfaction in participating in procurement, IT skills, years of experience in procurement, years of service experience in the public sector, number of in-service training programs attended, level of personal interest on the subject, and the workload in the workplace were analyzed performing ANOVA, independent T-test, and Spearman correlation to examine any association to knowledge scores. None of the factors were significantly related to knowledge scores. Data related to respondents' views on organizational factors that can affect gaining knowledge on procurement such as top management

support, assistance received from the immediate supervisors, opportunities available to learn procurement procedures, availability of an official who has mastered procurement, the extent to which the organization has the management procedures and tools that help to learn, access to procurement guideline, job rotation, the extent of supportive knowledge-sharing culture and extent of supportive experience-sharing culture of the organization was analyzed performing same statistical tests to examine any association to knowledge scores.

The knowledge scores were significantly associated with respondents' opinions on supportive knowledge-sharing culture (F=5.053, p=0.017) and supportive experience-sharing culture (F=4.146, p=0.032). Conferring to the respondents' opinion on supportive organization culture on knowledge sharing, it was highest in BH Dambulla and was lowest in DGH Matale. Respondents' opinion on supportive organization culture related to experience sharing was highest in BH Dambulla and lowest in RDHS Matale. Other organizational factors that can influence gaining knowledge were not statistically related to knowledge scores.

Discussion

The response rate was 75.9 percent, and it is compatible with studies conducted in similar settings[6]. The overall knowledge score of the sample was 66 percent (95% CI 0.626-0.695) and it can be categorized as “above average”. It is a good level of knowledge with some inaccuracies according to a modified 7-point knowledge assessment scale[13].

The mean knowledge scores of procurement objectives and ethics, and duties and responsibilities of procurement entities and procurement committees, were noticeably below the average levels, 45% and 50% respectively. Therefore, it needs administrative attention. Officials involved in technical evaluation and procurement planning represented a majority of the sample (n=17, 77.3%) Therefore, the results reflect the knowledge level and their opinion. Although half of the sample had some IT education, the lack of computer literacy might cause some of them not to respond.

The study sample consisted of experienced public officials (mean years of experience=17.59) which could have been reflected in the obtained knowledge scores, but a majority (54.5%) have had no in-service training. This is alarming for the administrators to seek remedies to inculcate organizational learning.

Officials at DGH Matale represented the largest portion of the sample (54.5%) and scored the lowest average knowledge score (62.9%) but were not statistically different from other institutions. This may be due to the fact that other organizations had a lesser number of officials to get involved in procurement. Therefore, the individual knowledge of some officials may have affected the average figures. Although it was

not statistically significant, male gender can be a factor influencing knowledge level (mean knowledge score among males=70.3%, mean score among females 62.9%). Knowledge-sharing culture and experience-sharing culture are statistically significant factors affecting knowledge acquisition in public procurement, indicating that organizational culture along with training plays a key role in knowledge acquisition.

Conclusion

The officials involved in procurement activities in the public health sector of Matale district had a good level of knowledge on the process but with some inaccuracies. Further, the average knowledge on procurement objectives and ethics was below average level. Most of the participants in the study had no training in public procurement. Acquisition of knowledge on the procurement process was significantly associated with the organizational culture and climates of knowledge-sharing and experience-sharing.

Recommendations

On-the-job training for officers involved in public procurement paying due attention to low-performed knowledge dimensions as shown in Table 01 is recommended. It is pertinent that female officials working in Health institutes of Matale District participate in those programs. Healthcare administrators should lead the way to improve knowledge-sharing and experience-sharing culture to uplift the knowledge levels among the respective officials.

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Dialysis options for kidney disease in Sri Lanka

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INTRODUCTION

Kidney failure, also called end-stage renal disease (ESRD), is the last stage of chronic kidney disease. When the kidneys are failing or become less functioning, patients must go for either dialysis or a kidney transplant for their survival[1]. Chronic kidney disease (CKD) has become a worldwide major public health issue in the present day. It is more prevalent in the elderly population. However, while younger patients with CKD typically experience progressive loss of kidney function, 30% of patients over 65 years of age with CKD have stable disease[2].

In 2017, 697.5 million cases of CKD (all stages) were recorded worldwide, with a global prevalence of 9.1%. From 1990 to 2017, the global all-age prevalence of CKD increased by 29.3%, whereas the age-standardized prevalence remained stable. Globally, 1.2 million people died from CKD in 2017. The global all-age mortality rate of CKD increased by 41.5% from 1990 to 2017. Diabetic nephropathy accounted for almost a third of disability-adjusted life years (DALYs) in CKD. Most of the burden of CKD was concentrated in the lowest three quintiles of the Socio-demographic Index (SDI)[2]. According to Balasubramanya and Stifel, more than 10% of the global population has affected by CKD and it causes 5-10million deaths annually[3]. Chronic kidney disease of unknown etiology (CKDu) also contributes in major proportion to this global disaster. It has reported many cases regarding CKDu recently in Nicaragua, El-Salvador, Egypt, Africa, countries in South-East Europe, and many countries in Asia including India and Sri Lanka.

This audit was conducted to understand the CKD situation in Sri Lanka with respect to the global situation and analysis of the treatment modalities available for those patients.

CKD/ CKDu IN SRI LANKA

CKD has caused a considerable impact on the health system in Sri Lanka. Diabetes, hypertension, and the various forms of glomerulonephritis are identified as the factors influencing the issue[4]. The reported characteristics of symptomatic individuals reveal that the incidence of CKD was significantly higher among females (62%) than males (38%). In addition to CKD, about 63% of symptomatic individuals had hypertension and about one-third of them also had diabetes. About 33% of the symptomatic individuals related to CKDu had neither diabetes nor hypertension, so they belong to CKDu[5].

CKDu is the emerging factor for CKD in rural Sri Lanka for the last two decades. It has been

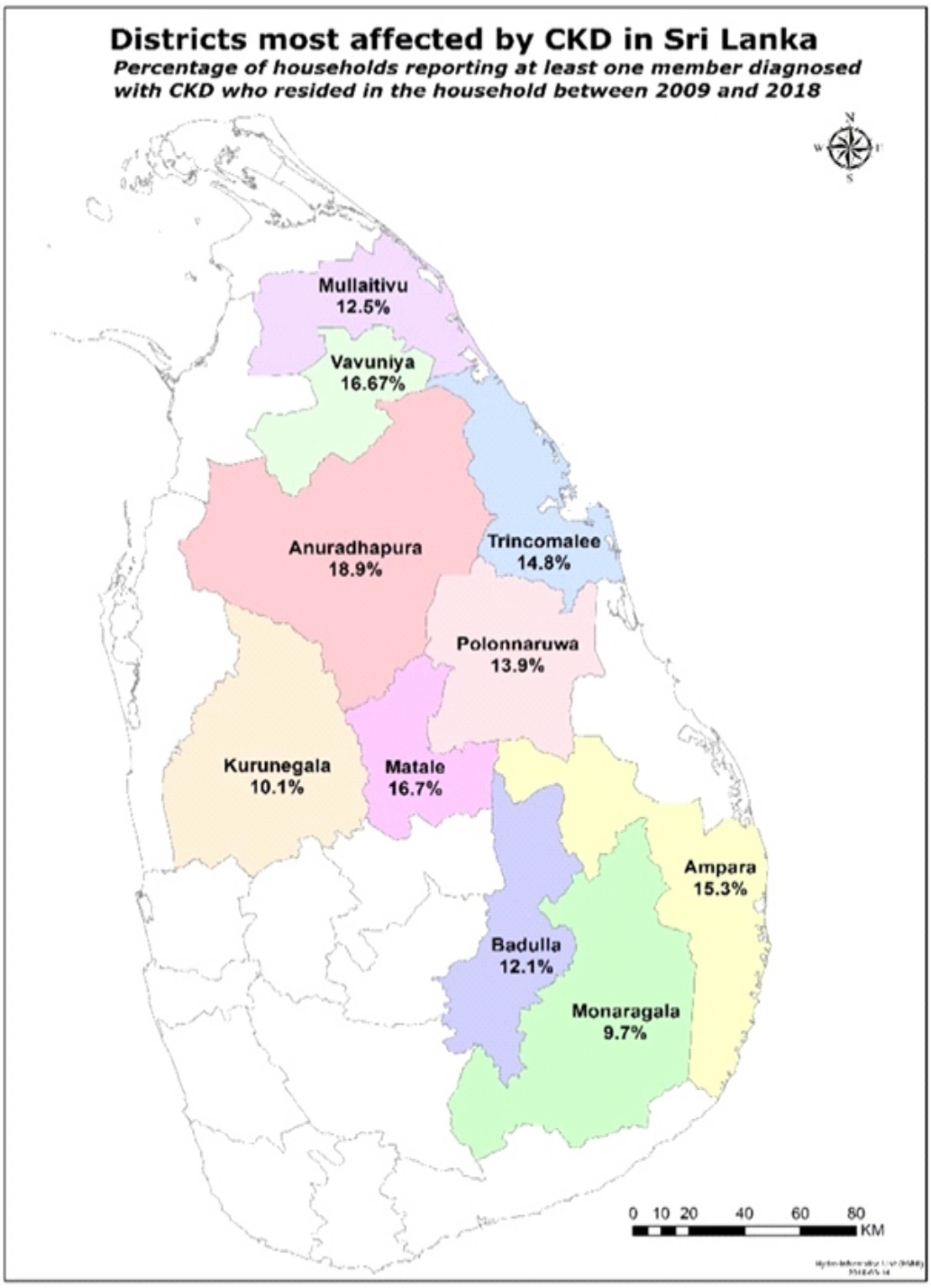


Figure 1: CKD prevalence rates across the most affected districts in Sri Lanka.

recorded as the 7th leading cause of death nationally. Research shows, that CKDu is more common with the people who are involved with farming and in some districts, the rate of prevalence takes 15.1%-22.9% value[4]. According to Kafle, Horbulyk, and Balasubramanya, a survey conducted in 10 districts across 8046 families reported that at least one member diagnosed with CKD resides in the households[5].

Patients who are suffering from CKD/CKDu must go for suitable renal replacement

Table 1: Distribution of CKDu patients by the provinces in Sr Lanka 2015 -2021 Feb

No	Province	Accumulated	New Patients				
		2015	2016	2017	2018	2019 (CKD/CKDu)	Total
1	North Central (Anuradhapura, Polonnaruwa)	21159	5248	4159	2615	2464	37787
2	Central (Matale → Wilgamuwa,Galewela,Naula,Laggala Pallegama, Dambulla, Ukkuwela, Yatawatta, Pallepola)	952	266	461	276	285	2240
3	Eastern (Ampara → Dehiaththakandiya, Mahaoya, Ridimaliyadda/ Trincomalee → Padavisripura, Gomarankadawala, Kanthale, Morawewa, Trincomalee, Kinniya, Seruvila, Muthur, Thambalagamuwa)	1138	641	482	303	175	2739
4	North Western (Kurunrgala + Puttlam -from year 2018)	1425	479	424	2448	2046	6822
5	Northern (Vavuniya, Mulathive, Mannar)	1986	190	105	582	289	3152
6	Southern(Hambanthota)	312	100	178	115	250	955
7	Uva (Badulla → Girandurukotte, Mahiyangane, Ridimaliyadda/ Monaragala)	3685	236	209	136	190	4456
8	Western (Gampha, Negambo, Colombo)	-	-	-	-	3048	3048
Total		30657	7160	6018	6475	8747	61199

Source - National Renal Disease Prevention & Research Unit

therapy to sustain their lives. They are always encouraged to continue their regular clinic visits to have medical guidance, medicine, and supervision to increase their quality of life along with the disease. At a certain stage, according to the advice of the consultant nephrologist, the patient must go for either dialysis or kidney transplantation.

NHSL conducts four renal clinics per week due to the rapid increase in the patient number. Pre-transplant, post-transplant, and a wide variety of renal patients attend these clinics for treatments. In addition, an average of 1000 hemodialysis (HD) sessions are conducted for acute kidney injuries, CKD, and patients who are waiting for kidney transplantation. In 2003 they carried out 3000 HD sessions but when it comes to 2013 the number increased to 11900 due to the high demand[6].

Table 2: Services provided for CKD patients from 2003 to 2014 at NHSL

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Number of HD done	4603	4978	5785	6576	6378	8504	9314	8097	8593	10161	11669	6919
Number of KT done	-	-	3	6	19	24	25	35	38	50	57	46
New clinic attendance	*	*	*	442	615	533	593	624	666	611	681	471

Treatment Modalities

Hemodialysis, peritoneal dialysis, and kidney transplantation are the major renal replacement modalities available in Sri Lanka. The main concerns in CKD management are screening, early detection, and prevention of the disease. Unfortunately, most of the cases are reported and detected in the late stages of the disease. When the disease is progressing, patients are encouraged to plan for renal replacement therapy[7].

Transplantation

Most young and middle-aged patients are offered transplantation. Kidney transplantation was introduced to Sri Lanka in 1985. It has completed nearly 5000 transplantations up to 2014[7,8]. KT is the best option for all advanced CKD patients unless there are medical contraindications[7]. However, it has become a challenge due to the rising number of patients.

Kidney transplants can be divided into two main types:

- Live donor transplants
- Deceased donor transplants

In live donor transplant surgery, a patient receives a kidney from a person who is still alive. This donor can be a parent, friend, relative, or any other person who is willing to donate a kidney to the patient. In the deceased donor transplant process, the patient receives a kidney from a person who has just deceased. If a patient could not find a suitable donor for the transplantation, he is added to the waiting list for the deceased donor transplant option. When live donor transplantation is considered if the donor is from an area where CKDu is prevalent, he might have a high chance of catching CKDu in his life course. In such cases, close monitoring and nephrology follow-up are essential for the donor[7]. KT belongs to the long-term strategy of the management of the disease. So, it is needed to establish more PD and HD centers to expand options to the affected people[8].

Dialysis

Hemodialysis

Hemodialysis is a process which uses to clean the blood in the body by using a dialysis machine along with dialysis solutions and a special filter that acts as an artificial kidney. In this mechanism, the dialysis machine pumps the blood through the filter. When blood passes through the fibers in the filter, dialysis solution passes in the opposite direction of the blood flow. Then the waste products move into the dialysate solution and filtered blood returns to the body[9].

Most countries considered HD as the default renal replacement therapy method. In the Sri Lankan aspect, much of the CKD population is reported from outside the cities. Some patients must travel more than 20km to reach an HD center. It is unable to establish HD centers in all the prevalent areas. A developing country like Sri Lanka allocated a significantly low budget to hemodialysis compared to other developed countries[10]. Based on the medical condition of the patient, they require to engage with 2 to 3 HD cycles per week. Patients and their family members

or helpers must face many difficulties to manage their work-life balance with this treatment. Especially more time must be consumed for traveling and treatment. Food and travel expenses also are borne by the patient, and it makes many deviances from their usual lifestyle. However, the other alternative dialysis method the PD gives better opportunities and several advantages to the patients, compared to HD[10].

Peritoneal Dialysis

Peritoneal dialysis brings more independence compared to hemodialysis. It's a needle-free treatment that brings no pain during the treatment. It grants the freedom to schedule their own treatment in a flexible manner as per their living style. Dietary restrictions are also less compared to other dialysis methods. The greatest advantage of this method is that patients are not required to visit the dialysis unit on regular basis. PD can be carried out at home[11]. On the other hand, it greatly reduces the hospital burden as well.

In peritoneal dialysis, a cleansing fluid contained in a bag including dextrose, water with salt, and other additives fills into the peritoneal cavity through a soft catheter implanted in the abdomen. When the solution entered the body cavity it absorbs the waste products and extra fluid from the body. After a certain number of hours, the solution which filled in the body drains out into an empty bag. When the drain is complete, the same procedure is repeated continuously with a fresh solution. Peritoneal dialysis can be categorized into two types [12].

- Continuous Ambulatory Peritoneal Dialysis (CAPD)
- Continuous Cyclic Peritoneal Dialysis /Automated PD (CCPD/APD)

CAPD

This process usually does 3-4 cycles in a period of 24 hours. The patient can sleep while the fluid is in the abdomen. Patients can schedule their treatment without getting day-to-day activities disturbed[12].

CCPD/APD

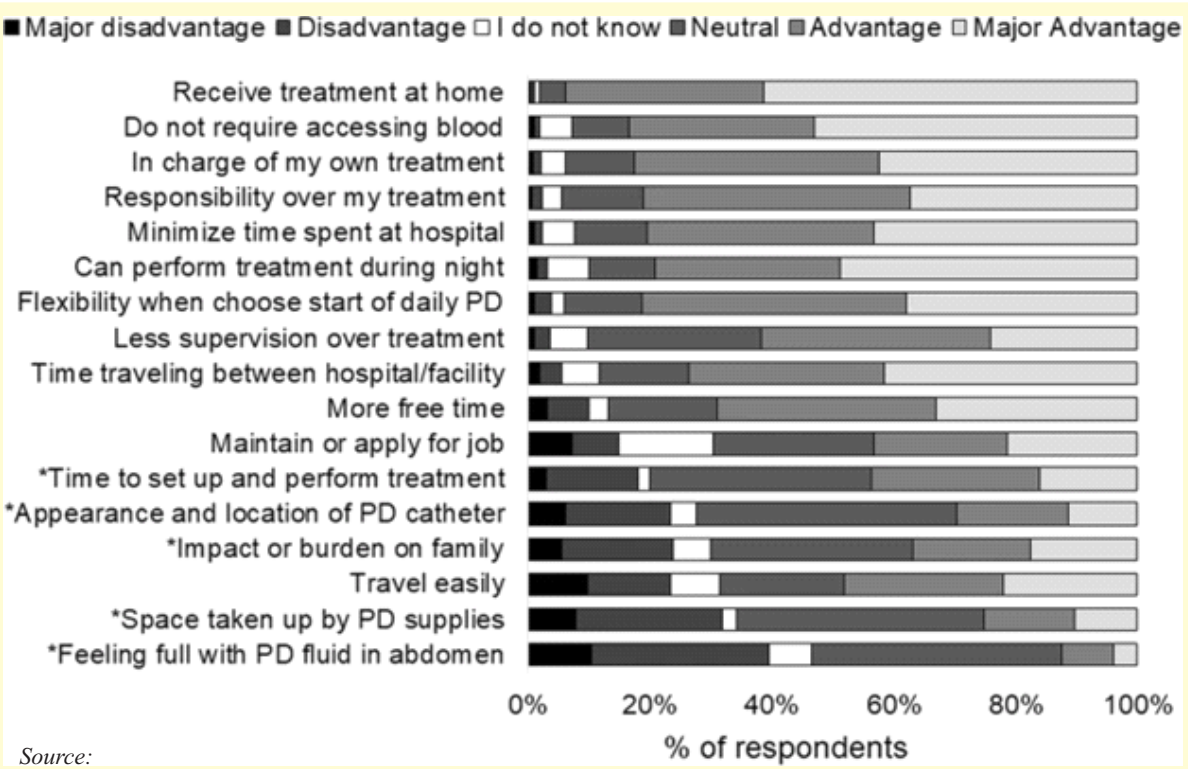
APD gives more freedom to patients compared to CAPD. In this procedure, a machine called the 'Cycler' does the fluid fill and drain without manual involvement. The number of cycles and other required data feeds to the machine when it is installed in the patient's home premises. Usually, this procedure is done at night times. So, the patient can spend the entire day time without having fluid in the abdomen. APD requires a minimum human touch to do the process[12].

Significant growth in PD has occurred in the US after changing the dialysis reimbursement policies by the government in 2011. According to Sukul et al. “Compared with facility hemodialysis, peritoneal dialysis is more cost-effective, less technically demanding, minimizes the exposure of patients to hospital-acquired infections, more feasible in rural and remote settings, and associated with better preservation of residual kidney function which is a factor associated with survival advantage among patients receiving dialysis[13]. Commonly perceived patient advantages of PD include enhanced

opportunities for rehabilitation and return to employment and improved satisfaction and quality of life".

Research conducted from 2014-2017 with the participation of 2760 PD patients responded to over 17 questions regarding the advantages and the disadvantages of peritoneal dialysis treatment. Patients above age 18, from Australia, New Zealand, Canada, Japan, Thailand, the United Kingdom, and the US were involved in this study, and Figure 2 summarizes how patients rated each of the 17 items related to their perceived advantages and disadvantages of PD. The factor most perceived as an advantage (i.e., advantage or major advantage) was "receive treatment at home" (94%), followed by "do not require accessing of blood" (84%). The most rated disadvantage (i.e., disadvantage or major disadvantage) of PD treatment was "feeling a full or bloated sensation with fluid in the abdomen" (39%), followed by "space taken up by PD supplies" (32%)[13].

Furthermore, Fig. 3 shows the distribution of the ADS by country. Japan and Thailand had the highest proportion of patients with a negative rating (ADS < 0, 11% within both countries), compared with 3–6% elsewhere. Most patients had a positive rating; 22–43% with ADS ≥ 1; and 32–42% with 0.5 ≤ ADS < 1. The data analysis of this large-scale study indicates the dialysis outcomes and the practice patterns of those patients in respective countries reported many advantages of PD than disadvantages.



Source:

Sukul, N., Zhao, J., Douglas Fuller, D. S., Karaboyas, A., Bieber, B., & Sloand, J. A. (2019, April 2). BMC Nephrology. Retrieved September 19, 2021, from https://bmcnephrol.biomedcentral.com/articles/10.1186/s12882-019-1304-3

Figure 2: Perception of patients on the advantages and disadvantages of PD

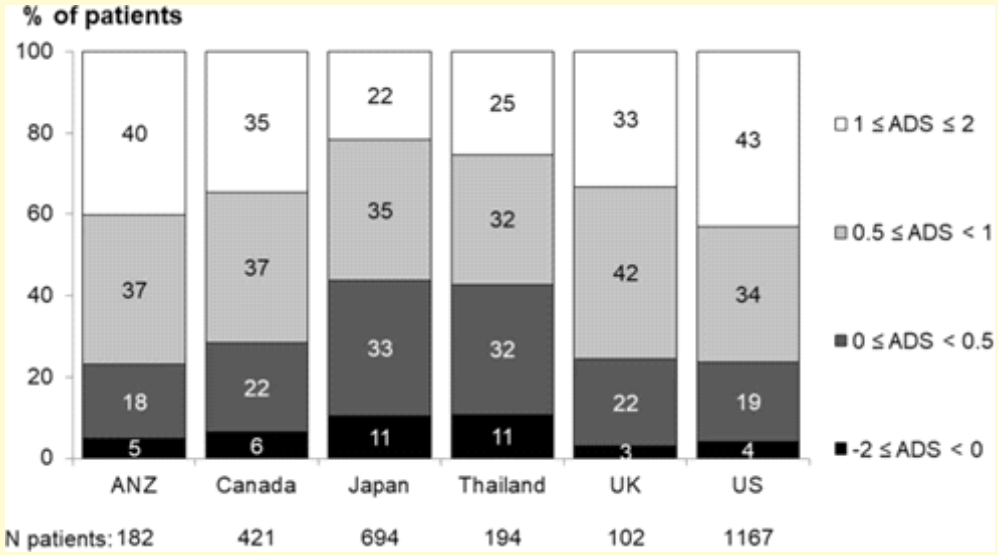


Figure 3: Distribution of ADS by country

The PD First Policy in South Asia has been gradually getting established in Sri Lanka. Through this approach, it has become much more convenient to provide Renal Replacement Therapy (RRT) to patients who are in affected areas. When establishing an HD unit in a hospital, the government needs to afford the high expenses of dialysis machines, equipment, and infrastructure. Reserving a space for that kind of purpose and staff allocation is also a challenge in the situation. However, with the PD modality, these factors are no longer a challenge to provide RRT[7].

The doctors and the nurses who are trained for PD, and the PD trainers from certain institutions, can provide adequate training and knowledge to the patients when they are selected and continue PD. Conducting home visits for the assessment of peritoneal dialysis patients is much important for the sustainability of the treatment and for improving the quality of life of those patients. The National Hospital Kandy is the main PD center which is having a successful peritoneal dialysis program in Sri Lanka. In the initial stage, staff faced many troubles to convince patients to the treatment. It was only 10% consented to PD. However, after introducing the PD clinics they were more receptive to initiating PD. Importantly, the International Fraternity of Nephrologists, the International Society of Nephrology, Sister Center partnership with the National Hospital Kandy, and Stanford University Division of Nephrology support making the PD successful in Sri Lanka[7]. In this sense, policy-level attention is all that needs to ignite the phase toward popularizing PD in Sri Lanka.

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How general human rights tools support the right to health: A review

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ABSTRACT

Introduction: The right to health is the economic, social, and cultural right of the individual to have a universal minimum standard of health without any discrimination. With the concern on human rights, the right to health is a highly developing area. Many human rights tools can be identified as strategies for protecting the right to health.

Objective: To understand how the general human rights tools support the right to health.

Methodology: A desk review was conducted to identify and analyze the relevant human rights tools. Data were extracted and summarization techniques were used to compile information.

Results and discussion: Identified human rights tools and strategies were conceptualized. Various treaties and declarations extending from the Universal Declaration of Human Rights to constitutional provisions were identified as relevant human rights tools to protect the right to health. Accountability is an important requirement for an effective mechanism. International Covenant on Economic, Social, and Cultural Rights (ICESCR) and Article 25(1) of the universal declaration were recognized as the main human rights interventions to protect the right to health. International Covenant on Civil and Political Rights (ICCPR) recognizes the right to health through various other rights such as the right to life and the right to equality. Indicators for the right to health reflect the various dimensions of the health status of a country.

Conclusion: This article focuses to introduce the international human rights mechanism for the right to health concept. Different types of general human rights tools and their relationships to the right to health were also identified.

INTRODUCTION

The right to health is the economic, social, and cultural right of the individual to have a universal minimum standard of health without any discrimination. As a type of human right, the right to health is an integral part of human development. After World War II, global leaders concentrated their attention to the circumstances which can be used to the prevention of such a tragedy. Having this common agreement, world leaders moved to the formation of the United Nations Organization (UNO) in 1945, and international human rights laws were considered the foundation cornerstone of the UNO. Within the UN system, human rights are understood as the basic rights and freedoms to which all human beings are entitled by virtue of being human[1]. Therefore, a wide range of human rights is identified as a necessary component to assure the aspirations of human rights. Further, political, civil, economic, social, cultural, development, and self-determination rights have been identified as the main subcategories of international human right[2]. In this context, the right to health is

considered a social right. Although categorized into various subtypes, identified human rights categories are practically highly interrelated and interdependent. Additionally, several types of international human rights tools have been drafted in order to binding of the member states in the context of human rights. International law is created basically in two ways, namely 'treaties which are legally binding agreements between states, and 'customary law in which commonly accepted practices. These customary laws such as declarations, resolutions, and standards are also known as soft laws[3]. Understanding the relationships between general human rights tools with the right to health would be helpful for healthcare services in many ways. Therefore, the objective of this review article is to understand how the general human rights tools support the right to health.

METHODOLOGY

This article reviews the literature on human rights and the right to health using a desk review. Electronic searches were carried out in four different databases of Google Scholar, PubMed, Scopus, and Wiley online libraries in relation to human rights tools and the right to health**.** Related declarations and treaties were mainly studied and analyzed. Further, data extraction and summarization were used to compile the information.

RESULTS

In the nineteenth century, poor working conditions in factories associated with the industrial revolution in England fomented broader recognition of state responsibility for population health[4]. However, the first formal articulation of states' duties on health was found in the constitution of the World Health Organization (WHO), a special UN agency for health that was created in 1948. It clearly mentioned that "the enjoyment of the highest attainable standard of health is a fundamental right of every human being without distinction" [5]

Since then, several types of declarations, treaties, and covenants, also known as human rights tools, based on international human rights have been formulated with the purpose of ensuring the right to health. The following tools have been identified and used to conceptualize the concept of the right to health.

The main objective of the universal declaration of human rights was to articulate a broad range of civil, political, economic, social, and cultural rights and the provision for the right to health could be seen in article 25(1) [6]. After that, in 1966 UN attempted to codify the universal declaration provision into a treaty with more legal obligations. However, this codification ended up with two covenants. The rationale of these two covenants was two types of global centralization namely capitalist and socialist at that time [6,7]. The capitalist end was more concerned with political and civil rights and led to the formulation of the International Covenant on Civil and Political Rights (ICCPR)[6,8]. Similarly, socialists end more concerned with social, economic, and cultural rights, which led to the formulation

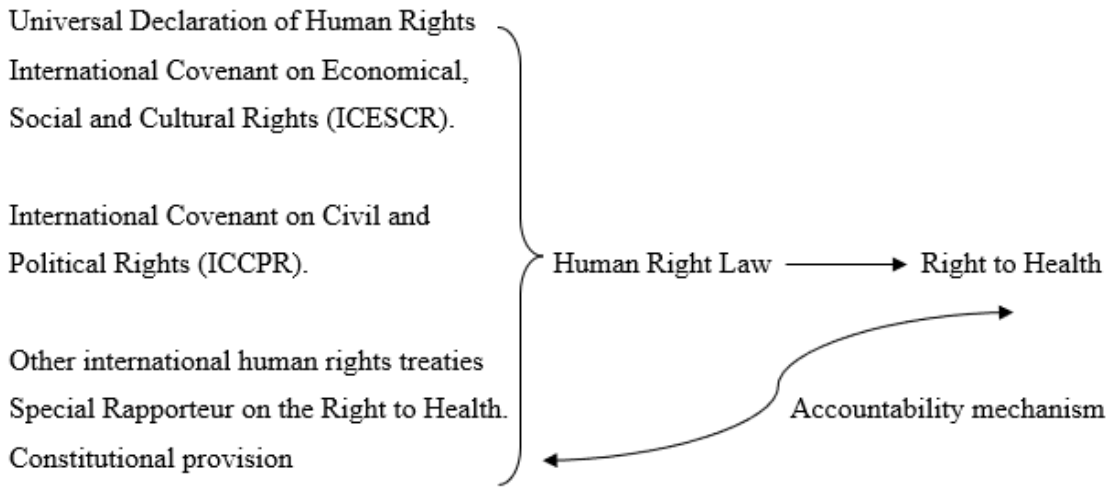

Figure 1. Conceptualization of determinants for the Right to Health.

of the International Covenant on Economic, Social, and Cultural Rights (ICESCR)[6,9]. Furthermore, the aforementioned universal declaration of ICCPR and ICESCR are collectively known as the International Bill of Rights. Significant growth in international human rights treaties providing explicit protection to vulnerable groups such as minorities, women and children, and people with disabilities can be seen after the introduction of the International Bill of Rights. In addition to that, various types of conventions and treaties which are mainly based on health, such as the Alma Ata Declaration[10], Ottawa charter[11,] etc. have extensively discussed the right to health. The creation of a Special Rapporteur on the Right to Health by the Commission on Human Rights in April 2002 by resolution 2002/31 with a mandate of promoting the right to health in the global arena reflects an important recognition of the right to health in the UN system[4,6,12]. Sir Paul Hunt was appointed as the first Special Rapporteur and Ms. Thaleng Mofokeng from South Africa currently serves as the Special Rapporteur on the Right to Health.

Timor-Leste is the only constitution where the words “right to health” are included in South-East Region[5]. However, countries namely DPR Korea, Indonesia, Maldives, Nepal (interim constitution), and Thailand use local equivalents similar to the English word “right” when describing people's entitlement to health care[5]

DISCUSSION

Article 25(1)[6] of the Universal Declaration of Human Rights states that everyone has the right to standards of living adequate for the health and well-being of himself and his family including food, cloth, and medical care. Having this background, International Covenant on Economic, Social, and Cultural Rights (ICESCR) contains the most authoritative formulation of the right to

health. Article 12 of the ICESCR recognizes the specific steps that states must take in order to fully realization of the standards of health; "states parties should take steps to reduce stillbirth and infant mortality, to improve the industrial hygiene, and to prevent, treat and control of epidemics and endemic diseases[6,9]. Furthermore, Article 14[9] which was formed by the Economic, Social and Cultural Rights (ESCR) committee, an independent monitoring body on ICESCR, reflects very comprehensive essential elements of the right to health and state core obligations. Providing nondiscriminatory access to health facilities, ensuring access to essential food and essential drugs, and adopting appropriate public health strategies can be identified as the prominent international human rights tools to ensure the right to health.

Although the ideological theory of the International Covenant on Civil and Political Rights (ICCPR) is different from ICESCR, it also recognizes the provisions for the right to health in their treaty through the various provisions such as the Right to life (article 6), Right to privacy (article 17), and Right to equality (article 26)[6,8]. Further, the interpretation on right to life is included states taking positive measures to reduce infant mortality and increase life expectancy.
The International Convention on the Elimination of All forms of Racial Discrimination emphasizes the right to health and medical care for minorities. It is a notable convention that not only identifies medical care but also suggests public health[13]. Additionally, the Convention on the Elimination of All forms of Discrimination against Women[14] (CEDAW) expands its scope to the right to health by ensuring women's equal access to healthcare services, particularly appropriate services during pregnancy and postnatal period. Further, the Convention on the Rights of the Child (CRC) which has been ratified by 193 countries gives an effectively universal reach and it is considered the most comprehensive specific treaty which covers most of the areas in right to health such as curative, preventive care and social determinants of health[4].

The Special Rapporteur on the Right to Health engages his /her mandate by undertaking a country mission, transmitting and communicating with the government in relation to violations of the right to health, and submitting annual reports to both Human Right Council and the General UN assembly.
Accountability mechanism can simply be described as how people and the community understand their government discharges its obligation to the right to health. Similarly, it provides the government to realize what has to be done for the people. Accordingly, Human Right Commission has developed a broad mechanism at various levels such as international, regional, and domestic levels.
If the government ratified any treaty, it should provide a regular report to the international committee of that particular treaty. Additionally, committees receive independent reports which are known as shadow reports from other organizations such as NGOs, and CBOs. After the complete

assessment, the committee publishes a concluding observation on a particular treaty[6,15].

Domestic accountability mechanisms are used to hold states, accountable for realizing the right to health. Litigation provides an important contribution to domestic accountability. It was possible to observe a significant increase in national-level cases involving the right to health, including low and middle-income countries during the past two decades[16].

Indicators for the right to health can be identified as a new initiative that has widely been used for the country's assessment on right to health. Backman and colleagues[6] explored the data from 194 countries and formulated 72 indicators for the assessment of the right to health on various dimensions.

Although Sri Lanka has reached a favorable level of health indicators than other countries with similar socio-economical conditions, it has not directly included the right to health in the current constitution which was adopted in 1978[17,18]. However, the 13th constitutional amendment which was carried out in 1987 included the provision of health care and its obligation to newly established provincial councils[5,17,18]. Moreover, the establishment of a constitutional council and subsequent independent committees can be considered a conducive initiative for the implementation of the right to health in Sri Lankan society.

Table 1. Selected indicators for the Right to Health and their categories.

Category	Indicators
Recognition of the Right to Health	* Number of international and regional human rights treaties recognizing the right to health ratified by the state. *Do the state constitution recognize the right to health
National Health Plan	*Does the state have a comprehensive national health plan with public and private sectors
Medicines	*Is the access to essential medicine, as part of the fulfillment of right to health, recognized in national legislation.
Monitoring, assessment, accountability	*Infant Mortality Rate, Maternal Mortality Rate
National financing	*Total Government spending on health as a percentage of GDP

CONCLUSION

This article focused to introduce the international human rights mechanism with the origin and development of the right to health concept. It described the special declaration, treaties and covenants that were developed on the Right to Health. Further, new initiatives of Right to Health such as Right to Health indicators and constitutional inclusions were discussed. Therefore, the practical strategies and legal background that were formulated by the United Nations and Human Right Commission will provide a ground-level understanding of the contribution of the Right to Health to improving health outcomes in the country.

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Assessing knowledge and behavioral pattern of nurses working in wards of four major specialties in Colombo South Teaching Hospital during the COVID-19 outbreak

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ABSTRACT

In the latter part of 2019, a severe respiratory disease was reported in China and was found to be an outbreak of Coronavirus. In March 2020, with the rapid increase of patients in many other countries, World Health Organization (WHO) declared COVID-19 as a pandemic.

As one of the frontline workers providing care to patients with COVID-19, nurses are at risk of developing the illness, if not geared up with appropriate Personal Protective Equipment (PPE). The infected number would rise rapidly if no adequate knowledge on basic preventive measures or no appropriate behavior patterns are adopted by the nurses. A descriptive cross-sectional study was conducted from 1st to 31st December 2020, in Colombo South Teaching Hospital to assess knowledge and the impact of the pandemic on the behavioral pattern of nurses using a self-administered questionnaire. The total number of nurses who responded to the study was 155.

Study indicates that nurses have sufficient knowledge of COVID-19, its contagiousness, transmission, prevention, and educating patients. The measures taken by the administration along with the relevant authorities in the institution during the initial phase of the pandemic were helpful to acquire such knowledge. Comprehensive training on donning and doffing of PPEs and other infection prevention practices is recommended as a Continuous Professional Development program.

Key words: COVID-19, Nurses, Behaviour patterns

INTRODUCTION

In the latter part of 2019, a severe respiratory disease was reported in Wuhan city, China, and had features suggestive of an outbreak which would be a major threat to public health[1]. A new type of Coronavirus (novel coronavirus, nCoV) was identified and isolated on 7th January 2020 by Chinese authorities. All suspected cases identified through retrospective review and active case finding were tested for novel coronavirus and ruled out other respiratory pathogens as the cause[2]. As there was a rapid increase in the number of cases in China and in many other countries in the world, on the 11th of March the WHO declared that COVID-19 has reached a pandemic situation [3].

On the 10th of March, the first Sri Lankan national tested positive for COVID-19[4]. An increased number of COVID-19 cases were reported especially from the Western Province. Initially, patients were managed only at the Infectious Disease Hospital (IDH). In March 2020, a ward of the Colombo South Teaching Hospital (CSTH) was closed after an in-house patient tested positive for the nCoV. Accordingly, measures were taken to strengthen the triage system of CSTH to identify patients suspicious of COVID-19 and to transfer them to Base Hospital Homagama (BHH)[5]. At the same

time, an isolation/respiratory ward was assigned to admit the most likely cases of COVID-19, until the receipt of Polymerase-Chain-Reaction (PCR) test results from the Medical Research Institute (MRI)[6]. On the 29th of April, the Director General of Health Services, Sri Lanka identified BHH as a treating centre[7]. Thereafter, the CSTH was allowed to transfer, only PCR test-positive patients, and the suspicious cases had to be admitted to the isolation/respiratory ward at CSTH.

However, in October 2020, there was pandemonium among the staff of CSTH after a healthcare worker tested positive for COVID-19. He was a member of the Peliyagoda fish market cluster. By the 15th of November 2020, there were 13 staff members inclusive of doctors, nurses, and health assistants who tested positive for Covid-19.

On the 10th of January 2020, WHO published a comprehensive package of online technical guidance for the detection, testing, management, prevention, and control of COVID-19 to protect healthcare providers when caring for patients, and also precautions to be taken when conducting aerosol-generating-procedures[8]

JUSTIFICATION

The growing incidence of COVID-19 continued to cause fear and anxiety, amongst the healthcare providers in CSTH, as the most vulnerable groups were at risk of contracting new virus infection. Like many other healthcare institutions in Sri Lanka, the CSTH also faced unforeseen challenges whilst providing care for patients.

The nurses are one of the frontline workers who provide care to patients and are at risk, if not geared up with appropriate Personal Protective Equipment (PPE). Also, the number infected would rise rapidly, if no adequate knowledge on basic preventive measures or no appropriate behavior patterns have been adopted by the nurses.

This study was conducted to assess the knowledge and the impact of the pandemic on the behavioral pattern of nurses in Colombo South Teaching Hospital, Sri Lanka.

OBJECTIVES

1.To assess the knowledge of nurses in Medical, Surgical, Paediatrics, and Obstetrics & Gynecology wards of CSTH in relation to basic preventive measures of COVID-19

2.To assess the behavior pattern of nurses in Medical, Surgical, Paediatrics, and Obstetrics & Gynecology wards of CSTH during the COVID-19 outbreak

3.To compare the behavior pattern of nurses in Medical, Surgical, Paediatrics, and Obstetrics & Gynecology wards during the pre and post-quarantine period

METHODOLOGY

A descriptive cross-sectional study was carried out from 1st to 31st December 2020 in CSTH. Two hundred nurses were selected

using the purposive sampling technique out of which only 155 responded. The study instrument was a self-administered questionnaire.

RESULTS

Of all the respondents, 64.4% of nurses were less than 39 years old. Out of the respondents, 36.6% had more than 10 years of service experience. Table 1 illustrates that 96.7% of nurses had knowledge on COVID-19 disease and its highly contagious nature. Of all the respondents, 79.4% of nurses stated that the knowledge gained from the training programs conducted at CSTH and from outside sources/training with respect to COVID-19 and its spread, was very useful when handling COVID-19 patients. The knowledge on COVID-19 and its high contagiousness of COVID-19 has improved to 100% among the respondents after their quarantine period.

Table 1: Assessment of Nurses' knowledge on COVID-19

		Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)
1.	Knowledge on COVID-19 and its high contagiousness (pre-quarantine)	63.1%	33.5%	1.5%	1.9%	-
2.	Knowledge gained from CSTH training on COVID-19, and its spread was useful when handling COVID-19 patients	40%	39.4%	11%	4.7%	4.9%
3.	Knowledge gained from outside sources/training on COVID-19, and its spread was useful when handling COVID-19 patients	44.7%	39.4%	13%	2.6%	-
4.	knowledge on COVID-19 and its highly contagiousness (post-quarantine)	73.3%	26.7%	-	-	-

It was observed that there was a significant difference between more experienced and less experienced nurses on certain domains related to knowledge (knowledge gained from the hospital training, knowledge gained from outside sources & training, awareness of the contagiousness), and on behavioral practices such as home hygienic practices.

When considering the behavior pattern adopted (Table 2), 94.2% of nurses used masks and shields while on duty. About 77.4% of nurses stated that they wear KN95 masks and appropriate PPE while attending aerosol-generating procedures. Almost 96.1% of nurses claimed that they have never taken meals together after the occurrence of the Brandix COVID-cluster. An important fact demonstrated by this study was that 99% of nurses had the habit of washing their hands very frequently. Answering another question 91.7% of nurses stated that they regularly provide education to in-patients on COVID-19 and its spread. Also, 99.4% of nurses adhered to good hygienic practices on returning home to avoid family members getting infected with COVID-19. About 93.5% of nurses revealed that they have no fear of handling patients when geared up with PPE. However, it was revealed that only 58.8% of nurses have received training from CSTH on the donning and doffing of PPE.

Table 2: Assessment of behavior patterns of Nurses during COVID-19 pandemic (pre-&-post-quarantine)

		Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)
1.	Wear surgical-mask and face-shield when on duty	52.3%	41.9%	2.9%	2.9%	_
2.	Wear KN95 mask with appropriate PPE during aerosol-generating-procedures	42.6%	34.8%	6.5%	12.9%	3.2%
3.	Since the occurrence of Brandix-Cluster never take meals in groups	54.2%	41.9%	2.6%	1.3%	_
4.	Washing hands frequently as a habit	80.6%	19.4%	_	_	_
5.	Educate in-patients on COVID-19 and preventive measures	52.3%	39.4%	6.5%	1.8%	_
6.	Hospital training on donning-and-doffing is useful	26.5%	32.5%	24.3%	12.8%	3.9%
7.	Hygienic measures are practiced at home as well	67.1%	32.3%	0.6%	_	_
8.	No fear in handling patients when geared-up with appropriate PPE	57.7%	33.8%	4.5%	_	4%
9.	Wear surgical-mask and face-shield when on duty ((post-quarantine)	66.7%	20%	13.3%	_	_
10.	Wear KN95mask with appropriate PPE during aerosol-generating-procedures (post-quarantine)	60%	6.7%	20%	10%	3.3%
11.	Never take meals in groups (post-quarantine)	86%	14%	_	_	_
12.	Washing hands frequently as a habit (post-quarantine)	93.3%	6.7%	_	_	_

When paired sample T-test statistic was applied to assess the comparison of the nurse's behavior pattern during pre-and-post-quarantine, it was revealed that there was a significant difference ($p<0.002$) in the use of KN95 masks and appropriate PPE during aerosol-generating-procedures. It was also revealed that there is no significant difference observed in wearing masks/face shields while on duty, taking meals in groups, and hand washing practices, during both pre-and post-quarantine situations.

DISCUSSION

The objective of this study was to assess the knowledge on COVID-19 and its contagiousness, and the hygienic behavioral practices of nurses that should be adhered to during a rapidly spreading contagious disease of COVID-19. The knowledge and behavioral practices of nurses in pre and post-quarantine periods were also assessed.

The results showed that most of the nurses practice proper hygienic behavioral measures (washing hands frequently as a habit) during duty hours and also when they get back home. They have given up the social practice of having meals in groups due to the outbreak situation. The frequent awareness of all staff to refrain from group meals could be the reason for the above practice. Similar findings were found in a study where nurses showed greater awareness, positive attitudes, optimal prevention, and positive perceptions

during the COVID-19 outbreak in Saudi Arabia[9].

The nurses who were on quarantine as a result of close contact did not show any significant difference in their knowledge on COVID-19, its contagiousness, wearing surgical masks and face shields when on duty, having meals in groups, or hand washing as a frequent habit. However, a significant difference was noted among post-quarantine nurses with respect to wearing KN95 masks and appropriate PPE during aerosol-generating procedures. It can be due to their perceived belief that they possess sufficient immunity against the disease, so they did not contract the disease even after close contact.

The study revealed that nurses are well aware of the COVID-19 infection and its management. They have understood its rapid spread, the symptoms of the disease, and the precautions to be taken by them when handling COVID-19 suspected and infected patients. Only 58.8% of nurses were satisfied with the training from CSTH on donning and doffing PPE. This was expected as only a limited number of nurses had the opportunity to undergo such proper training as it had to be conducted in smaller groups (15-20). The nurses' behavioral patterns related to frequent hand washing, and avoidance of having meals together are commendable.

CONCLUSION

The study reveals that the nurses have sufficient knowledge about COVID-19 disease, its contagiousness, its transmission, and preventive measures to be taken. The knowledge was adequate to educate patients too. The measures taken by the administration, specialists, nursing authorities, public health, and infection control teams in CSTH at the initial phase of the pandemic such as awareness sessions of the disease, preventive measures, provision of appropriate PPEs, appropriate decisions at the regular COVID-19 steering committee meetings were helpful to achieve the above. Comprehensive training on donning and doffing of PPE and other infection prevention and control practices is recommended as a continuous professional development program.

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Reduction of door-to-needle time in the management of patients with acute myocardial infarction admitted to the coronary care unit in District General Hospital Matara Sri Lanka

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ABSTRACT

Introduction Acute myocardial infarction (MI) is the leading cause of death in Sri Lanka. The American College of Chest Physicians (ACCP) guidelines recommend that for patients with acute MI who are candidates for fibrinolytic therapy, the therapy should be administered within 30 min of arrival at the hospital or first contact with the healthcare system (grade 1A).

Objective To reduce door-to-needle time to 30 minutes in the management of patients with ST elevated myocardial infarction (STEMI) admitted to the coronary care unit in District General Hospital (DGH) Matara.

Methodology A clinical audit was done by analyzing the prevailing process of thrombolysis for acute MI. Based on the identified gaps an integrated care pathway (ICP) was introduced as an intervention. This included the removal of irrelevant steps, avoiding unnecessary delays, and assigning a responsible person to each step in the process. A comparison was done between pre and post-interventional groups.

Results Door-to-needle time was significantly shorter after the introduction of ICP (intervention).

Conclusion ICP is a good tool for quality assurance. It was helpful in reducing the door-to-needle time in the management of patients with STEMI admitted to the cardiac care unit in DGH Matara, once it was used as the intervention in clinical audit.

INTRODUCTION

Background

Acute myocardial infarction is the leading cause of death in Sri Lanka[1]. The prevalence of the disease reaches three million people worldwide, with more than one million deaths in the United States annually[2]. Epidemiological studies in the Sri Lankan population are limited, so it is difficult to get an accurate idea about the prevalence of cardiovascular diseases in Sri Lanka. Acute myocardial infarction can be divided into two categories, non-ST-segment elevation MI (NSTEMI) and ST-segment elevation MI (STEMI). Unstable angina is like NSTEMI, but cardiac markers are not elevated[2].

An MI can lead to irreversible damage to the cardiac muscle by reducing the perfusion to cardiac muscles. It may lead to impairment in diastolic and systolic function and make the patient prone to arrhythmias. In addition, an MI can lead to several serious complications. The main objective of the management of MI is reperfusion of the heart and restoring blood flow. The earlier the treatment (less than 6 hours from the onset of symptom), the better the prognosis[3]. Fibrinolytic therapy (FT) has reduced mortality following Acute Myocardial Infarction (AMI), with the major

effect coming from the early achievement of infarct-related artery patency. The Grampian Region Early Anistreplase Trial (GREAT) showed that delaying thrombolytic treatment by one hour increases the hazard ratio of death by 20%, equivalent to the loss of 43 per 1000 lives within the next 5 years (95% CI 7-88, p = 0.012) [7] Delaying thrombolytic treatment by 30 minutes reduces the average expectation of life by approximately one year[3].

Justification

The American College of Chest Physicians (ACCP) guidelines recommend that for patients with AMI who are candidates for fibrinolytic therapy, the therapy should be administered within 30 minutes of arrival at the hospital or first contact with the healthcare system (grade 1A). Thus, a short treatment interval must be considered as an adjunctive agent to fibrinolytic therapy. There are three components that determine the time between the onset of MI and the administration of fibrinolytic therapy (grade 1A).

1. Delay in seeking medical attention
2. Transport delays
3. The door-to-needle time (the interval between the patient's arrival at the medical facility and the initiation of fibrinolytic therapy).

Efforts to reduce each of these components will lead to additive benefits in improving the survival of patients with acute MI. The door-to-needle time (DNT) is the easiest to modify. The rationale of the study is that, in health staff, concern about DNT is lacking

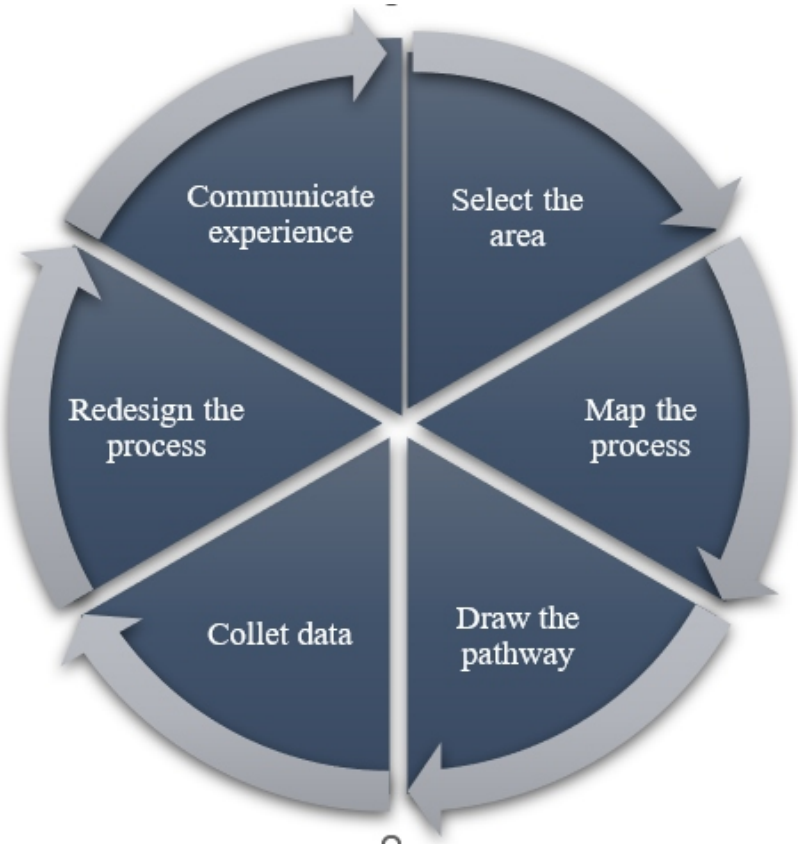

Figure 1. Implementing an integrated care pathway

and very few of them actually think of the importance of giving early thrombolysis to their patients after MI

Therefore, this study was carried out to determine the door-to-needle time (DNT) and identify the factors causing a delay in DNT, so that prompt measures can be taken to reduce this time to save many lives after myocardial infarction.

In Sri Lanka Median DNT is 64 minutes while the mean is 98 minutes[3]. There is no study carried out to assess the DNT for STEMI in District General Hospital (DGH) Matara. However, there is a possibility for it to be similar to the national level. Current guidelines for the management of STEMI recommend reducing the DNT by at least 30 minutes for fibrinolytic therapy and 90 minutes for primary percutaneous coronary intervention (PCI) as treatment goals[4].

Most of the possible factors causing delays in DNT can be overcome by the introduction of integrated care pathway (ICP). An ICP is a multidisciplinary outline of anticipated care, placed in an appropriate timeframe, to help a patient with a specific condition or set of symptoms move progressively through a clinical experience to positive outcomes. Variations from the pathway may occur as clinical freedom is exercised to meet the needs of the individual patient. The introduction of ICP in the management process of acute myocardial infarction is important because they help to reduce unnecessary delays. ICPs can also be used as a tool to incorporate local and national guidelines into everyday practice, manage clinical risk, and meet the requirements of clinical governance[4].

Research problem

Extended door-to-needle time in the management of patients with acute myocardial infarction admitted to Coronary Care Unit (CCU) in DGH Matara

General Objective

To reduce the door-to-needle time to 30 minutes in the management of patients with STEMI admitted to CCU in DGH Matara.

Specific objectives

1. To identify the factors associated with increased door-to-needle time in the management of patients with STEMI admitted to CCU in DGH Matara.

2. To introduce corrective measures to reduce door-to-needle time in the management of patients with STEMI admitted to CCU in DGH Matara.

METHODOLOGY

Study setting

This was an interventional study carried out in DGH Matara. It is the largest hospital in Matara district, and an average of 1338 people receive treatment daily from the hospital (OPD:391, Admissions:297, Clinics:650). It has emergency management facilities including emergency cardiac care. Patients with Acute Coronary Syndrome

(ACS) are managed basically in CCU and Emergency Treatment Unit (ETU) where the initial management is done. In addition, a significant number of patients with ACS are managed also in medical wards. Management of patients with STEMI is carried out in two places. The initial management to stabilize the patient is done at the ETU and the rest is done in the CCU. Patients included in the study were those with STEMI and were managed at the ETU or CCU or in both, provided that the patient was registered at the CCU with a bedhead ticket. A Google form was used for the collection of data and the collected data was sent to Principal Investigator (PI). Secondary data was collected through a desk review. A data collector was trained to collect the data to measure DNT in the management of patients with STEMI admitted to the cardiac care unit.

The DNT was measured and recorded. Integrated care pathway (ICP) was introduced after discussing with relevant stakeholders such as the consultant cardiologist and emergency care physician. Staff training was done, and awareness programs were conducted for the proper functioning of ICP. After the introduction of ICP, DNT was measured for the second time and compared with the earlier measurement to see if there was any statistically significant difference between the pre and post-interventional figures.

- *Null hypothesis (H_0) – The introduction of an integrated care pathway does not significantly lower the DNT.*
- *Alternative hypothesis (H_1) – The introduction of an integrated care pathway significantly lowers the DNT.*

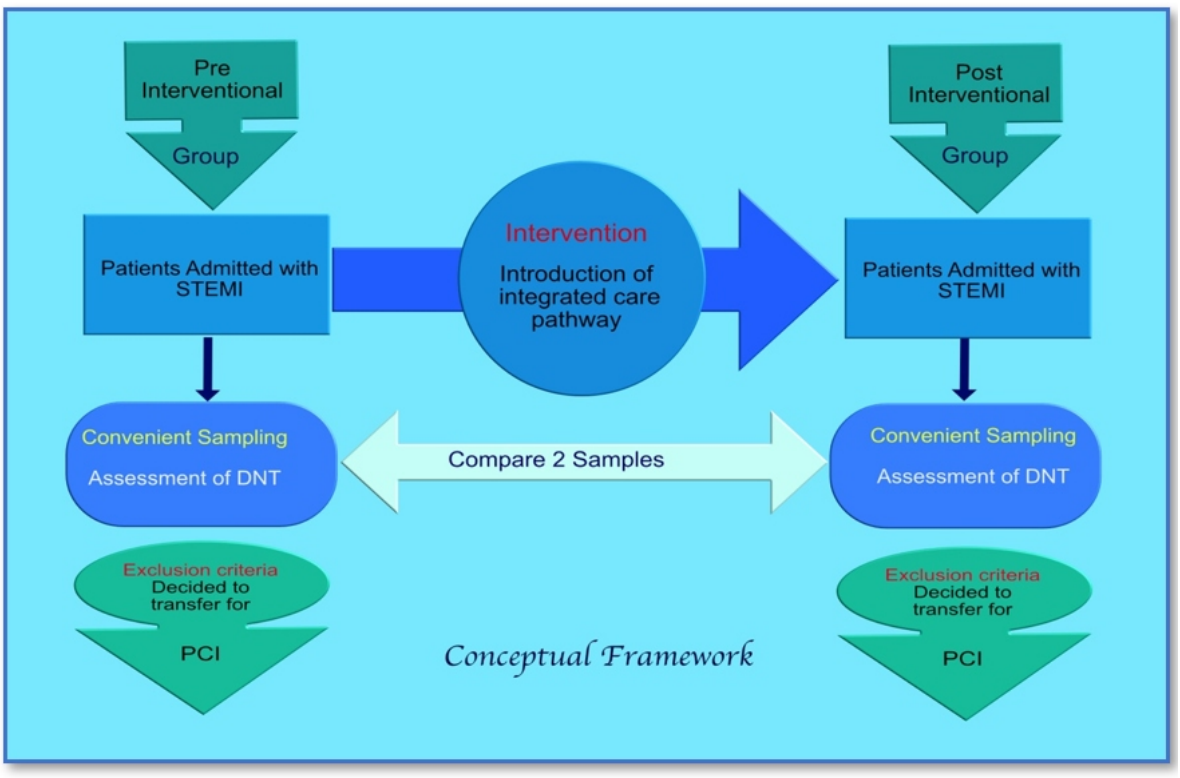

Figure 2. Conceptual framework of the project

Intervention

In the reduction of DNT, the development and redesigning of the process of thrombolysis were extremely important. ICP was introduced to the thrombolysis process as a major part of this development. In the process of mapping, PI carefully observed what really happened once a patient with

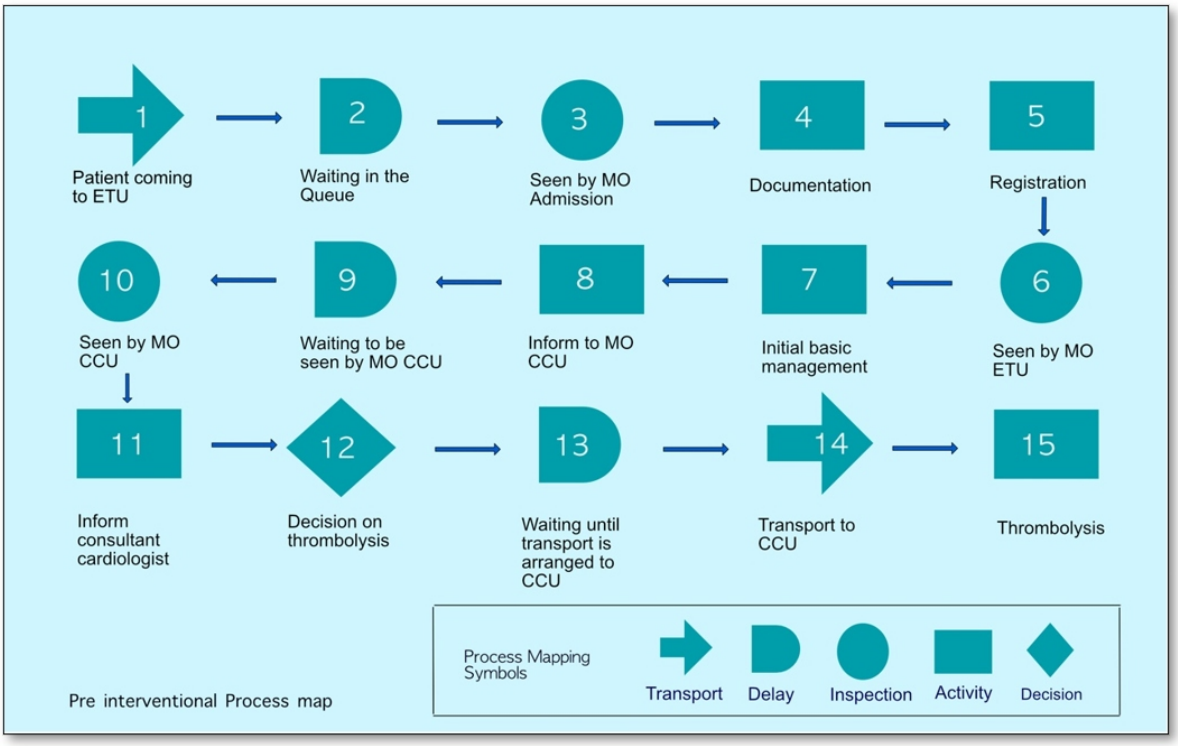

Figure 3. Process map of thrombolysis for a patient with STEMI before the intervention

STEMI comes to the hospital. Each step of the process was noted down and mapping was done before the intervention. (Figure 3)
With the careful mapping of the process of thrombolysis, unwanted steps and delays were identified. The process was redesigned as shown in Figure 4.

With this process development following decisions were made after discussing with the relevant authorities.

1.After the initial management MO ETU should directly contact the relevant consultant and get an opinion on thrombolysis rather than contacting MO CCU and waiting until he comes. They can contact either the consultant cardiologist or the emergency physician assigned to ETU.

2.All other unnecessary steps in the existing long process were removed and delays were avoided. As an example, in the previous process, once a suspected patient comes to ETU the nurse should contact the ECG technician. ECG technicians are not always available at the ETU as they are visiting other places such as wards in addition to ETU. Depending on the workload ECG technician take some time to reach the ETU once they receive the message. Therefore, the process

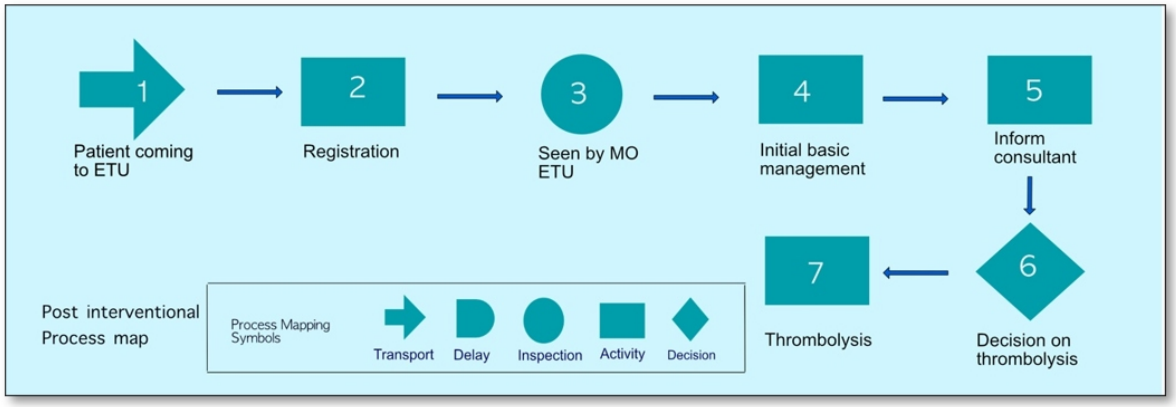

Figure 4. Process map of thrombolysis for a patient with STEMI before the intervention

was re-designed by making an ECG machine available in ETU then the ETU nurses can perform the ECG.

3.Modern communication methods such as WhatsApp or Viber can be used to communicate with consultants at any time when they are away from the hospital. Photos of X-rays, ECGs, and video clips of cardiac monitors and a short record of a discussion with the patient (with consent) can be sent to the consultant through the above media to help him to arrive at a decision.

4.Each step in the process should have a responsible person and a minimum time period to avoid unnecessary delays.

5.Door-to-needle time for thrombosis in MI to be monitored continuously.

After the introduction of ICP with process development, DNT was remeasured as shown in Figure 6.

Variables

The following variables were considered in the analysis.

1.Door-to-needle time in the management of patients with ST elevated myocardial infarction (STEMI) admitting to CCU in DGH Matara before the intervention.

2.Door-to-needle time in the management of patients with STEMI admitted to CCU DGH Matara after the intervention.

Sampling method

All the patients with STEMI admitted and underwent thrombolysis within a period of three months starting from the 1st of October 2021 were included in the study. The participants were selected for two samples

1. Pre interventional sample
2. Post interventional sample

Pre interventional sample

BHTs of all those patients admitted with STEMI and underwent thrombolysis from the 1st of October to the 13th of November 2021, it was taken as the pre-interventional sample. This sample had a total of 42 participants.

post interventional sample

The intervention was done during the period starting from the 14th of November 2021 to the 17th of November 2021. All patients admitted with STEMI and who underwent thrombolysis from the 18th of November to the 31st of December were taken as the post-interventional sample. It was also a convenient sample and had a total of 51 participants.

Exclusion criteria

Patients admitted during the period of 14th of November 2021 to 17th of November 2021 were excluded as it was the period when the

intervention was carried out. In addition, those patients who were admitted to CCU but transferred to other healthcare institutions for thrombolysis and those who were admitted to other wards in the same hospital and transferred to CCU for thrombolysis also were excluded. There were very few patients who were seen by the consultant cardiologist in the private sector and admitted with written advice to MO CCU for thrombolysis. They were excluded too.

RESULTS

A total of 93 patients had been thrombosed either in the ETU or CCU of DGH Matara from the 1st of October 2021 to the 31st of December 2021. Thrombolysis was done only with Tenectaplase injections. A summary of patients who underwent thrombolysis during the period is given in Table 1.

Table 1. Summary of patients who underwent thrombolysis during the study period

Month	Number of patients to whom thrombolysis was done
October	30
November	26
December	37
Total	93

Table 1. Summary of patients who underwent thrombolysis during the study periodMonthNumber of patients to whom

Table 2. Descriptive statistics of the pre-interventional sample

Descriptive Statistics					
	Number	Min	Max	Mean	Std. deviation
Door to Needle Time	42	24.00	69.00	47.1905	13.75436
Number (listwise)	42				

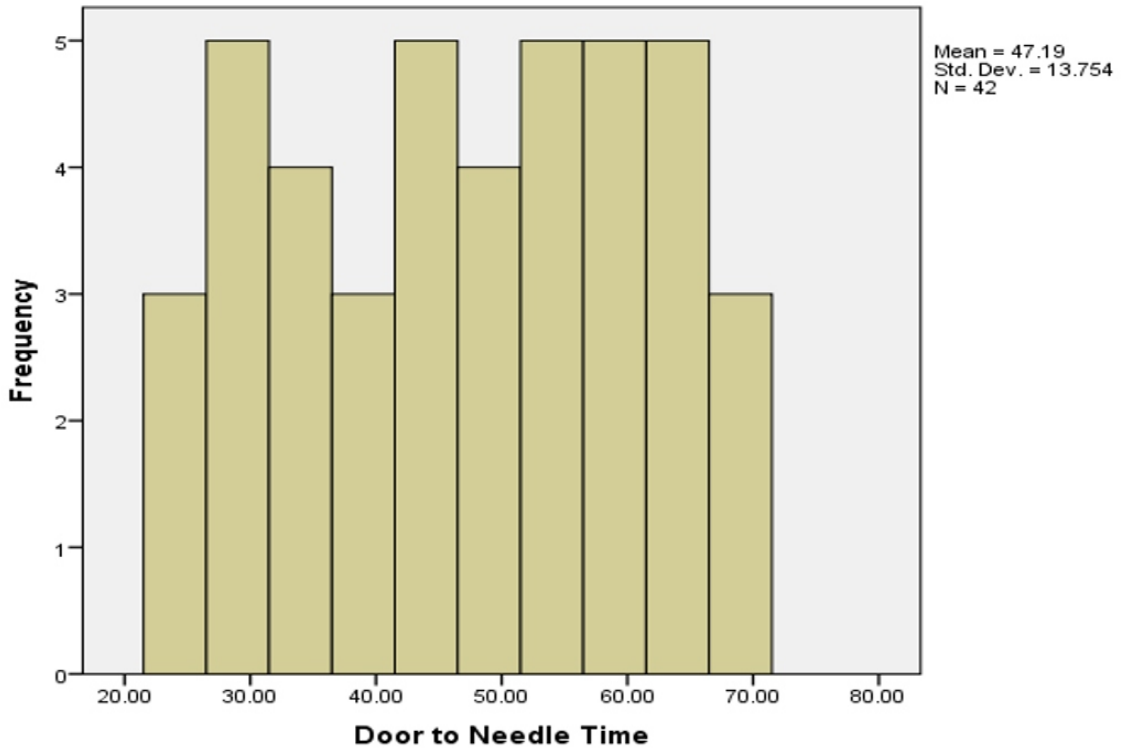

Figure 5. Histogram of the DNT of the pre-interventional sample

Table 3. DNT according to the class interval in the pre interventional sample

The class interval of Door-to-Needle time					
DNT class interval		Frequency	Percent	Valid Percent	Cumulative Percent
	20-30min	7	16.7	16.7	16.7
	30-40min	7	16.7	16.7	33.3
	40-50min	8	19.0	19.0	52.4
	50-60min	11	26.2	26.2	78.6
	60-70min	9	21.4	21.4	100.0
	Total	42	100.0	100.0	

Table 4. Descriptive statistics of the post-interventional sample

Descriptive Statistics					
	Number	Min	Max	Mean	Standard deviation
Door to Needle Time	51	15.00	55.00	27.9608	6.86720
Number (listwise)	51				

thrombolysis was done October 30 November 26 December 27 Total93

Door-to-needle time before the intervention

The mean of the DNT of pre interventional sample was 47.1905min with a standard deviation of 13.75min. The sample had a total of 42 participants (Table 2).

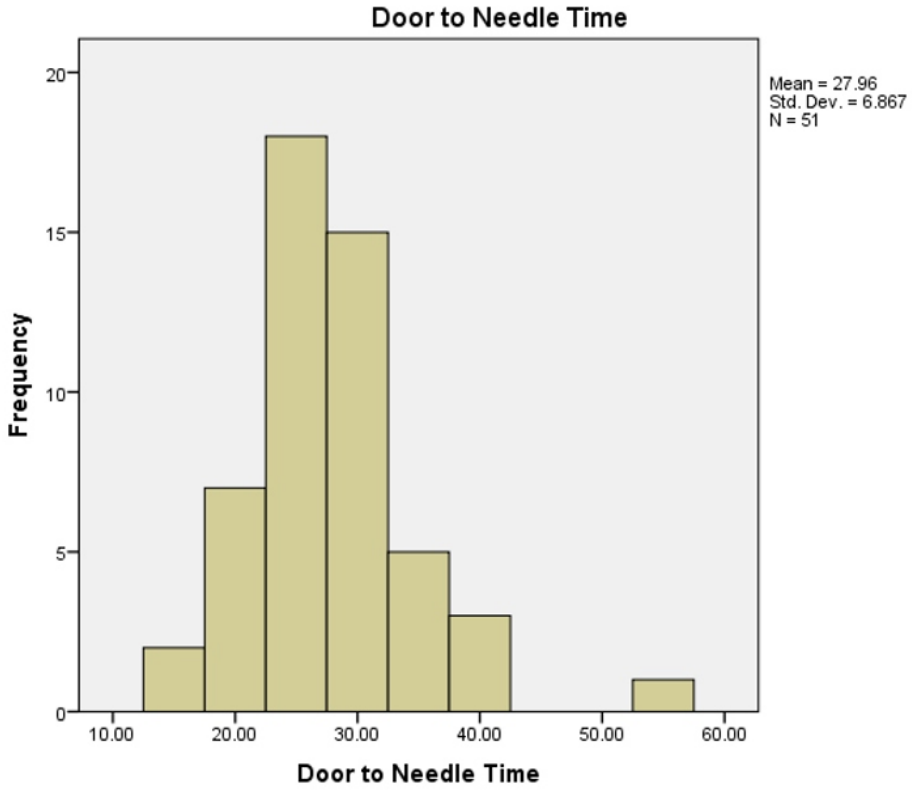

Figure 6. Histogram of the DNT of the post-interventional sample (DNT in minutes)

Table 5. DNT according to the class interval in the post-interventional sample

DNT class interval		Frequency	Percent	Valid Percent	Cumulative Percent
	10-20min	6	11.8	11.8	11.8
	20-30min	33	64.7	64.7	76.5
	30-40min	10	19.6	19.6	96.1
	40-50min	1	2.0	2.0	98.0
	50-60min	1	2.0	2.0	100.0
	Total	51	100.0	100.0	

Although the mean is 47.19 min., for the greatest number of patients DNT was between 50-60 min. (Figure 5 and Table 3). Only on seven occasions, DNT was reported between 20-30 min and on nine occasions DNT was between 60-70 min.

Door-to-needle time after the intervention

After the process development and redesigning of the integrated care pathway, DNT was measured in post interventional sample (Figure 6 and Table 4, 5).

According to Table 5, the majority of patients who underwent thrombolysis had a DNT between 20-30 min. The number of cases with DNT of more than 40 min has been reduced. Statistical comparison between the DNT of pre and post-interventional groups was done using independent-sample Mann-

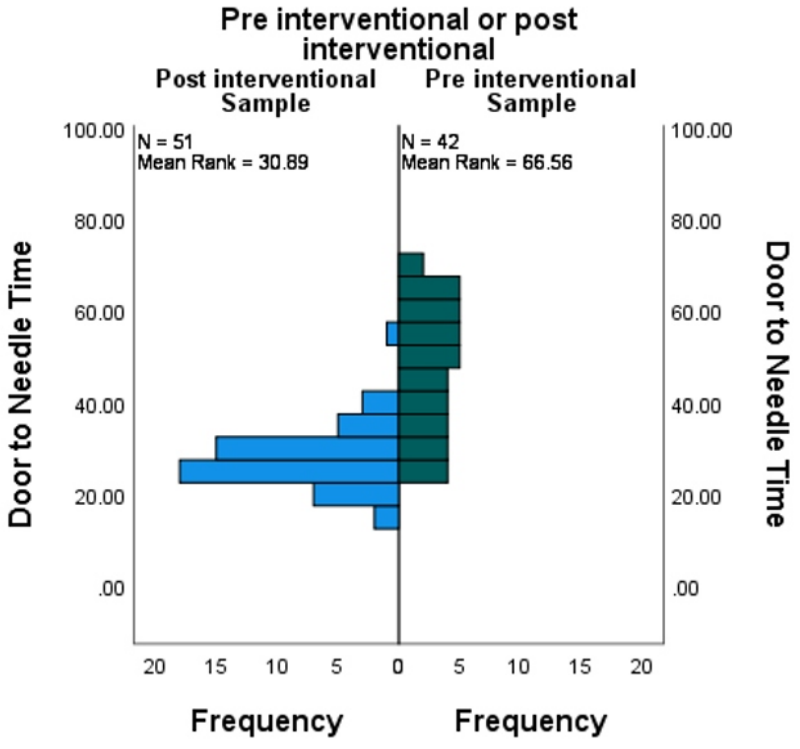

Figure 7. Pre and post-interventional groups compared with the Mann-Whitney U test

Table 6. Test summary of Mann-Whitney U test

Independent-Samples Mann-Whitney U Test Summary	
Total number	93
Mann-Whitney U	249.500
Wilcoxon W	1575.500
Test Statistic	249.500
Standard Error	129.339
Standardized Test Statistic	-6.352
Asymptotic Sig. (2-sided test)	.000

Whitney U test as the samples were not normally distributed (Figure 6).

According to the test results, the difference between the DNT of pre-interventional and post-interventional samples was statistically significant ($U=249.5$, $p<0.001$). Therefore, the Null hypothesis was rejected, and the alternative hypothesis was accepted. It concludes that the DNT of post interventional sample was significantly lower than the DNT of pre interventional sample.

CONCLUSIONS AND RECOMMENDATION

The reduction of DNT in this study was done by redesigning the existing process of thrombolysis practiced in both ETU and CCU in DGH Matara. It was successfully done by mapping the process and identifying unnecessary additional steps and delays. It was through a clinical audit. Therefore, it is recommended that clinical audits be used as a continuous measure to achieve the standards of their service and standards of health care institutions. This concept was used to reduce the DNT to less than 30 minutes in the management of patients with STEMI admitted to the cardiac care unit in DGH Matara.

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An assessment of online visibility and engagement of COVID-19 related health messages by selected health-related organizations in Sri Lanka

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ABSTRACT

Introduction We live in an era of digital technologies. COVID-19 aggregate the usage of digital tools by all industries including the health sector. Social media and other digital marketing tools are used by healthcare professionals for health education. Online visibility and engagement of these tools affect the spread of health messages to people.

Objectives To assess the digital presence of selected health organizations in relation to COVID-19 related health messages.

Methodology A descriptive cross-sectional study was done to assess the digital presence of online health messages marketed by selected healthcare organizations. The Ministry of Health, Health Promotion Bureau, Epidemiology unit, Sri Lanka Medical Association, and Government Medical Officers Association were selected for the study.

Results The Health Promotion Bureau which is the focal point for health promotion has shown 39% of visibility. Sri Lanka Medical Association has shown 44% recording a higher percentage of visibility and engagement. Overall visibility and engagement are high in Health Promotion Bureau. However, none of the organizations reached more than 50% of visibility and engagement.

Conclusions Selected organizations have shown less than 50% in both visibility and engagement in digital presence. It is recommended that these organizations should pay more attention to enhancing the digital presence of their health messages related to COVID-19.

Key words: Digital technologies, online visibility, online engagemen

INTRODUCTION

Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered novel strain of coronavirus, SARS-CoV-2[1]. On January 30th the World Health Organization (WHO) declared COVID-19 a Public Health Emergency of International Concern. A pandemic state was declared on March 11, 2020[1]. A foreign national was diagnosed with COVID-19 on 27th January and the first local case was diagnosed in March 2020[2]. Government of Sri Lanka imposed a curfew-style lockdown within a few days. The lockdown restricted people's movement and caused the prohibition of social gatherings[3]. Further, the government closed down the private sector and government organizations for a considerable period of time.

Health education leads people to make accurate choices about their own, their family, and their community's health. Accurate information with different types of presentation is vital for achieving health education targets[4]. Therefore, Health education on newly emerged COVID-19 is vital for the prevention and management of the disease. Health experts and scientists are using social media to engage with the public. They share accurate information with the public[5]. The total population of the world is 7.476 billion and 3.773 billion are internet

users, 2.789 billion are active social media users, 4.917 billion are unique mobile users, and 2.549 billion are active mobile social users. Facebook's social media network has 1.871 billion active users, YouTube has 1 billion, Instagram has 600 million, Twitter has 317 million, and LinkedIn has 106 million users[6]. About 77% of the population searches the internet to arrive at their decision on health issues[7]. Social media are web-based services that allow persons, communities, and organizations to link, connect, and interact with each other[8]. It is of paramount need that healthcare organizations recognize the importance of online and use digital platforms to address people[7].

Social media can create timely interactive communication and foster dialogue and content exchange among message consumers and creators[9]. Social Media users can react to the content of health messages by putting comments, likes, shares, etc. Internet users and active social media users in Sri Lanka in January 2021 were 10.9 million (50.8%) and 7.9 million (36.8%)[10] respectively. The total population of Sri Lanka is 21.46 million and of that 7.9 million use social media. The social media growth rate was 23.4% from April 2020 to January 2021 (1.5 million population).

Physicians can also use social media networks to collaborate, share knowledge, and work together, thus potentially improving care outcomes[11].

General Objective

To assess the digital presence of selected health organizations in relation to COVID-19-related health messages.

Specific Objectives

1.To assess the online visibility of COVID-19 related health messages by selected health-related organizations

2.To assess the engagement of COVID-19 related health messages by selected health-related organizations

3.To draw a visibility and engagement matrix

METHODOLOGY

A descriptive cross-sectional study was done to assess the digital presence of online health messages by selected organizations. During the COVID-19 pandemic, many organizations were involved in delivering health messages. However, for this study, five organizations were selected. The selected time frame for the study was May 2020. Selected organizations for the study

Table 1. Social Media users in Sri Lanka by the type of media (January 2021)[10]

	Population	Male (%)	Female (%)
Facebook	7 million	65.7	34.3
Facebook messenger	3.8 million	65.8	34.2
Instagram	1.3 million	65.6	34,4
Twitter	187.2 thousand	85.7	14.3
LINKEDIN	1.3 million	58.5	41.5

include:

- Ministry of Health (MOH) - Government
- Epidemiology Unit (Epid. Unit) - Government
- Health Promotion Bureau (HPB) - Government
- Sri Lanka Medical Association (SLMA) - Non-government (academic body)
- Government Medical Officers Association (GMOA) - Non-government (trade union)

These five organizations are running their own websites. In this study, five social media platforms were considered which are frequently used by society, and assess the digital presence of each organization in said social media platforms. Visibility is any type of product or service to reach more people to be aware of that product or service. In marketing, the more visibility you have for your brand, the more chances you have to bring a new customer to your product or service[12]. Engagement means the interaction achieved with the target groups[13]. It is the involvement, participation, and self–expression. Variables for objective 1 are shown in Table 2.

The following keywords were used to assess the search visibility

1. COVID-19 in Sri Lanka
2. Signs and symptoms of COVID-19
3. Prevention of COVID-19
4. PCR testing in Sri Lanka
5. Quarantine process in Sri Lanka

Table 2. Description of each category (online visibility)

Category	Description	Score given for each category
Organic search visibility	Organic search results are the non-ad/pay-per-click results that appear in the search engine listing purely based on the quality, relevance , and content of the website[12,14]. The share of traffic that a website receives is based on its rankings in the organic search results.	Organic traffic is considered the most valuable traffic source . Perform manual Google search for 10 selected keywords relevant to the category. Based on the organic search results, a score is given for each brand out of 25.
Paid search visibility	Paid search results are basically ads paid by businesses in order to rise above the organic results in the fastest way possible[12,14]	Perform manual Google searches for 10 selected keywords relevant to the category. Based on paid search results, a score is given for each brand out of 2 5.
Display visibility	Keeping display ads in web site [12,14]	Use a similar Web.com Channel Overview report to compare display traffic to brand websites. Depending on the percentage of display traffic the brand is attracting, assign a score out of 25
Social visibility (12,14)		In the Facebook Page of the brand, and use "Ads & Transparency" feature spy ing on the ads run by the page. Score out of 25

6. Self-isolation
7. Living in a new normal situation
8. Guidelines for prevention of COVID-19 in a new normal situation
9. Vaccination for COVID-19
10. Guideline for opening schools and companies in a new normal situation

Total marks for visibility criteria for each organization were calculated and tabled. In the engagement, the survey was done for categories that include presence, followership, recency of posting, and responsiveness.

Description of each variable of online engagement includes:

- Presence[15] - Post and engage in social media accounts
- Followership[16] - Someone who subscribed to a social media account
- The recency of posting[17] - Recent and updated posts
- Responsiveness[18] - Establishing additional information and responding faster to people's queries

RESULTS

This study was done to assess online visibility and engagement of COVID-19 related health messages in selected organizations. Scores were given according to the description; Table 3 shows the visibility score and table 4 shows the engagement score.

Health promotion Bureau and Ministry of Health gain more visibility scores.

The calculated total score of visibility and engagement is shown in Table 5.

The visibility and Engagement Matrix was developed from the information in Table 5.

DISCUSSION

As a newly emerged disease, people are not aware about COVID-19. Due to the information gap, misinformation and rumors have spread among people[19]. During this pandemic situation, social media became the most-searched venue for information gatherings[19]. People's movements were restricted and there were no social gatherings. This allowed people to have more time to use social media. Healthcare organizations especially government healthcare institutions have more responsibility to deliver accurate information. Due to the restriction of movement, digital health messages are more vital. Social media can be used to engage with patients, support physicians, and improve population health outcomes[19].

This survey was done five months after the declaration of the pandemic. Ministry of

Table 3. Visibility score for each organization

Visibility Criteria		MoH	Epid. unit	HPB	SLMA	GMOA
Organic Search Visibility		10	8	14	0	0
Paid search Visibility	out of 25	0	0	0	0	0
Display visibility		15	0	0	7	6
Social Visibility		10	0	25	12	14
Total Visibility score		35	8	39	19	20

Table 4. Score of each organization (online engagement)

	MoH	Epidemiology	HPB	SLMA	GMOA
Face Book					
Presence	5	2	5	5	5
Followership	4	0	5	3	5
Recency of Posting	4	0	5	5	5
Responsiveness	1	0	1	1	2
Total Score	14/20	2/20	15/20	14/20	17/20
YouTube					
Presence	5	0	5	5	5
Followership	3	0	3	4	4
Recency of Posting	2	0	3	4	4
Responsiveness	2	0	2	1	1
Total Score	12	0	13/20	14/20	14/20
Twitter					
Presence	5	0	5	5	5
Fellowship	3	0	3	3	3
Recency of Posting	2	0	3	5	2
Responsiveness	0	0	0	0	0
Total Score	10/20	0	11/20	14/20	10/20
Instagram					
Presence	0	0	0	0	0
Followership	0	0	0	0	0
Recency of Posting	0	0	0	0	0
Responsiveness	0	0	0	0	0
LinkedIn					
Presence	0	0	0	2	0
Followership	0	0	0	0	0
Recency of Posting	0	0	0	0	0

Table 5. Total Engagement and Visibility score

	Visibility score	Engagement score
MoH	35	36
Epidemiology Unit	8	2
HPB	39	39
SLMA	19	44
GMOA	20	41

Health, the Epidemiology unitm and the Health Promotion Bureau are the main stakeholders in managing the outbreak. Health Promotion Bureau is the main disseminator of health messages and shows 39% of visibility. SLMA (44%) and GMOA (41%) show more digital engagement. Though the overall visibility and engagement are high in HPB, none of the organizations reaches more than 50% of visibility and engagement.

CONCLUSION

The survey revealed that the online visibility and engagement of those selected organizations in digital media were less than 50%.

RECOMMENDATIONS

It is recommended that these organizations should pay more attention to the digital presence of their health messages.

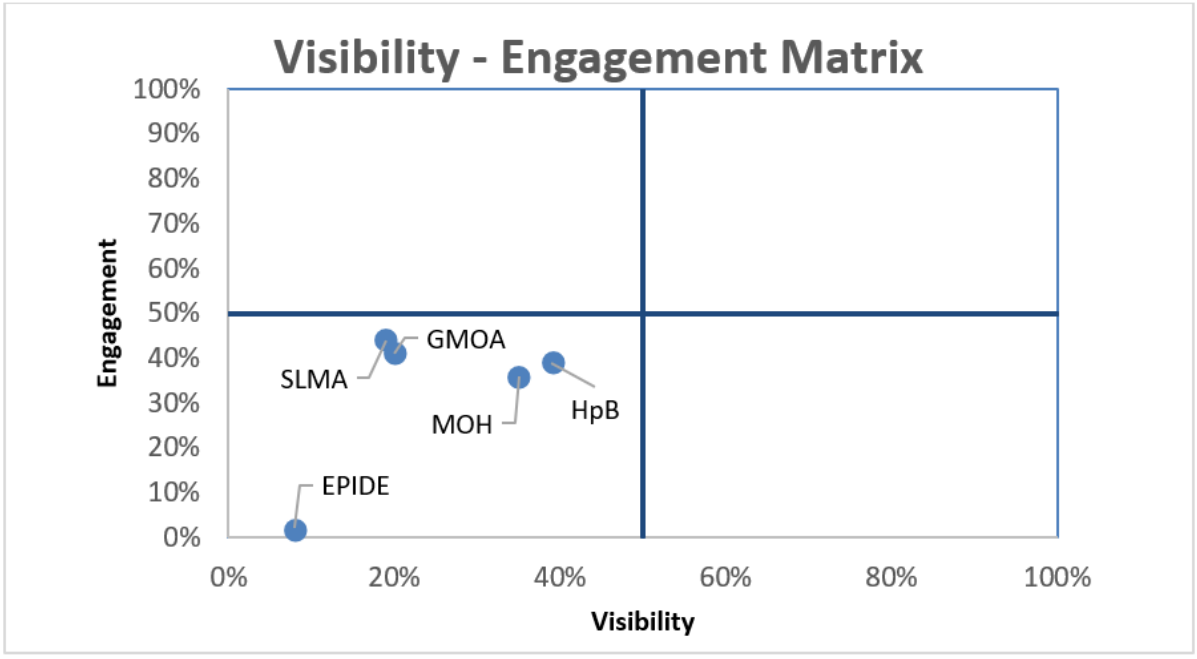

Figure 1. Visibility and Engagement Matrix

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Cost study of three selected laboratory investigations at different levels of healthcare institutions in Western Province, Sri Lanka

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ABSTRACT

Introduction: The cost of laboratory services has become a challenge for continuing free healthcare in developing countries like Sri Lanka.

Objectives To undertake cost estimation and cost comparison of three selected laboratory investigations at different levels of healthcare institutions in the Western Province.

Methodology: A descriptive cross-sectional study was carried out from May 2019 to July 2019. The analysis was based on secondary data collected from Lady Ridgeway Children's Hospital Colombo (LRH), Base Hospital Horana (BHH), and Divisional Hospital Bandaragama (DHB), during the study period. The cost analysis was performed using the step-down method.

Result:s Total cost of FBC, CRP, and UFR tests were calculated, and compared among three hospitals. The total cost of FBC in the LRH, BHH, and DHB was Rs.301.16, Rs.255.19, and Rs.380.83 respectively. The total cost of CRP in those hospitals was Rs.264.46, Rs.237.70, and Rs.85.63 while the total cost of UFR was Rs.130.21, Rs.126.42, and Rs.81.83 respectively.

Discussion: The highest cost of FBC as revealed by this study was in DHB. It comprised of a high equipment cost per test. Though the LRH possesses a high-tech hematology analyzer, the higher volume of investigations done makes the equipment cost less per test in the LRH. The cost of testing CRP, in the order of highest to lowest, was in the LRH, BHH, and DHB. The reason for the lowest cost of CRP in DHB can be attributable to the non-usage of reagents and less equipment cost due to manual handling. The cost of UFR was comparatively low in DHB. It can be due to the contribution of low salary cost and low cleaning service cost because of less human resource usage.

Conclusion This study reveals that the lower a hospital in the hospital hierarchy the cost of investigations tends to increase. This can be attributable to the fact that the number of investigations done is relatively less in smaller hospitals. At macro economical level, this is a challenge to the efficient utilization of scarce resources.

Recommendation: In keeping with the primary health care reforms, it is proposed to channel investigations from primary medical care units to divisional hospitals. Thereby utilization of investigative equipment could be optimized.

INTRODUCTION

In Sri Lanka, laboratories are available in both government and private health sector. In the government sector, curative care institutions can be categorized into three level1.

- Primary care institutions (Divisional Hospital type A, Divisional Hospital type B, Divisional Hospital type C, Primary Medical Care Unit)

- Secondary care institutions (Base Hospital type A, Base Hospital type B)
- Tertiary care institutions (National Hospitals of Sri Lanka, Teaching Hospitals, Provincial General Hospitals, and District General Hospitals)

Laboratory investigations are available at all these levels as appropriate to each. Laboratory services are imperative for confirming the diagnosis, seeing the effectiveness of the treatment, and identifying possible risk factors by screening for diseases 2. Therefore, the availability of quality laboratory services is vital.

Justification

This study intended to find the cost of selected investigations in different levels of healthcare institutions in Sri Lanka**.** Such information is useful for the Ministry of Health to determine the norms for each care level and will help to improve the awareness of both the staff and the public about the cost of services. Cost awareness is a way of achieving optimized services and resource utilization. Underutilization of primary healthcare and gaps in prioritizing laboratory services can be identified as out-of-pocket expenditures3.

Offering quality laboratory services for screening, diagnosing, monitoring, and maintaining proper care is imperative. In this sense, focusing on the cost at different levels of hospitals is important since it allows the costs to be linked to differences in resource availability and the patterns of facility utilization. This study selected the Lady Ridgeway Children's Hospital Colombo (LRH) as a tertiary care institution, Base Hospital Horana (BHH) as a secondary care institution, and Divisional Hospital Bandaragama (DHB) as a primary care institution. These institutions are in the same Province with similar socio-economic backgrounds and epidemiological patterns. Therefore, the cost can be compared across the different care levels of the Sri Lankan health system.

General Objective

To undertake cost estimation and cost comparison of three selected laboratory investigations at different levels of healthcare institutions in the Western Province

Specific objective

1. To estimate the unit cost of selected three laboratory investigations at three different levels of health care institutions in Western Province.
2. To compare the unit cost of each investigation at three different levels of healthcare listed in the objective 1
3. To identify the factors that drive the cost of investigation at each level of care.

LITERATURE REVIEW

Sri Lanka is a country that provides free health services to all its citizens while struggling to cope with trending economic challenges and evolving global market conditions[4.] Constantly, the healthcare

expenditure in Sri Lanka has shown a similar pattern with a 72% spent on curative services and only 3% on preventive services, while 20% spent on purchasing drugs, medical equipment, and supplies for medical investigations over the years from 2014 – 2016. Thus, accurate allocations to different components will be well-guided if the costs of different service provisions are available[4,5].

METHODOLOGY

A cross-sectional descriptive study was carried out attempting to study the total cost of selected laboratory investigations at three hospitals of different care levels. The study selected the LRH as a tertiary care institution, BHH as a secondary care institution, and DHB as a primary care institution. The laboratory of all three hospitals receives samples directly from the wards and the Outpatient Department (OPD).

Among many others, Full Blood Count (FBC), C-Reactive Protein CRP), and Urine Full Report (UFR) were selected considering the availability at all levels. The study was conducted from May 2019 to July 2019 and data collection was done during the same period. The data were extracted from the laboratory records. The total number of investigations done during the study period at each institution was considered in the study. Therefore, all the FBC, UFR, and CRP tests that were performed at the OPD laboratory settings during the study period were included, but investigations performed in the wards or at night were excluded.

The total cost of each investigation included all the costs from the time of drawing blood to the issuing of the report. All the identified elements that had contributed to the cost related to the selected investigations were listed. The list included direct, indirect, and other costs including salaries, material costs, equipment costs, and other relevant costs incurred to sustain the laboratory operations. Finally, the total cost was determined based on the step-down method[6] of costing.

In this cost analysis, the fixed capital cost (land, buildings, furniture, equipment, and the cost of other fixed assets) and recurrent/variable costs (water, electricity, cleaning, telephone, stationary, consumables, reagent, and staff salary) were considered under the relevant heads of direct, indirect, and other costs. However, the buildings are more than 25 years old in all three hospitals while the land cost tends to vary significantly due to prevailing market conditions. Therefore, the costs of buildings and land were ignored due to the fact that adding those values can impart a huge impact on the final cost estimation[7,8].

The study was carried out after obtaining approval from the respective administrative authorities of the selected hospitals. Ethical approval was obtained from the Ethics Review Committee of the LRH.

RESULTS

The frequency distribution of FBC, CRP, and UFR done in each selected institution is shown in Table 1.

Table 1. Number of investigations done in the three OPD laboratories at LRH, BHH , and DHB

Investigation	Number of investigations d one		
	LRH	BHH	DHH
FBC	8770	4952	1726
CRP	466	4594	764
UFR	3351	2788	1135

The results of the cost analysis of those selected investigations based on the estimated total costs and the number of blood/urine samples investigated during the study period are shown in Table 2.

Accordingly, the cost of a FBC in the LRH, BHH, and DHB was Rs.301.16, Rs.255.19, and Rs.380.83 respectively. The cost of a CRP rest was Rs.264.46, Rs.237.70, and

Table 2. Total cost per investigation in LRH, BHH, and DHB

Cost element		**Cost in each Hospital (LKR)**								
		LRH			**BHH**			**DHB**		
Furniture		0.3			0.10			.15		
Equipment cost	FBC	18.59			9.57			208.79		
	CRP	14.89			37.08			5.59		
	UFR	5.64			0.80			1.79		
Salary		77.17			82.17			37.70		
Electricity		5.00			4.17			5.70		
Water		0.40			0.20			0.12		
Cleaning Services		4.50			2.60			-		
Consumables		35.9			34.90			34.9		
Stationery		1.30			1.48			1.47		
Reagent cost	FBC	158			120			92		
	CRP	125			75			-		
Estimated cost of	.									
FBC		**301.16**			**255.19**			**380.83**		
	CRP	**264.46**			**237.70**			**85.63**		
	UFR	**130.21**			**126.42**			**81.83**		
Final cost allocation		FBC	CRP	UFR	FBC	CRP	UFR	FBC	CRP	UFR
Direct cost		18.89	15.19	5.94	9.67	37.18	0.90	208.94	5.74	1.94
Indirect cost		282.27	249.27	124.27	245.59	200.52	125.52	171.89	79.89	79.89
Estimated total cost		**301.46**	**264.46**	**130.21**	**255.19**	**237.70**	**126.42**	**380.83**	**85.63**	**81.83**

Rs.85.63 while the cost of a UFR was Rs.130.21, Rs.126.42, and Rs.81.83 respectively in the same hospitals.

According to the results, a comparison of the total cost of each investigation at three different levels of healthcare was done and identified the factors that drive the investigation costs at each level of care.

DISCUSSION

Though there was no wide variation in the percentage of the recurrent cost for FBC testing of the cost centers, a significant difference was observed in the range of cost at the cost centers. The lowest value was seen at BHH. In DHB it recorded the highest value as there was a considerably higher contribution of the equipment cost with a lesser number of tests that had to perform. The cost of a FBC was the highest in DHB and lowest in BHH. It was because of the unusually high cost of equipment in DHB. The considerations on the calculation of the capital and recurrent cost for the CRP test were similar to the FBC. There was a significant variation in both capital and recurrent costs at the cost centers. The highest capital cost contribution for CRP testing was recorded at the LRH due to the higher capital cost of equipment. The lower capital cost was due to manual methods of performing tests and therefore, there was no added equipment cost. In recurrent cost, there was no significant difference. The reason for the higher cost at LRH was mainly due to the high cost of equipment used.

In all three hospitals, the UFR is done manually. However, the cost of a UFR in DHB was comparatively low due to lower salary and cleaning costs associated with lesser human resource usage. In LRH cost of UFR was Rs.130.21 while it was Rs. 81.00 in DHB. Compared to LRH and BHH, the number of UFR tests performed in DHB was low. This can be due to the lower density of the draining population. However, the DHB exceeded the human resource efficiency compared to the other two hospitals.

The cost of a CRP test in the order of highest to lowest was LRH, BHH, and DHB. The reason for the lowest cost of a CRP in DHB could be attributable to the non-availability of reagents and less equipment cost associated with manual handling. Laboratory cleaning was done by the ordinary laborer

(SKS) attached to the laboratory. Therefore, no additional cost was incurred as in LRH and BHH. Many types of investigations in large numbers are done in the same biochemistry analyzer in the LRH leading to less equipment cost assignable to each investigation. However, the regent cost in LRH is considerably high due to high-tech machine-specific reagents. The reason for the high equipment costs in BHH could be attributable to the high depreciation cost.

CONCLUSION

If the FBC, CRP, and UFR testing was done in the private sector in Western Province, the average cost for testing amounted to Rs.630.00, Rs.760.00, and Rs.540.00 respectively. This revealed that the provision of government services in terms of providing laboratory services can be highly effective in reducing out-of-pocket expenditure. On the other hand, there is a higher public expectation of the reliability of government services. These facts justify the provision of effective, efficient, and quality laboratory services in the public health sector. Therefore, all the possible measures should be taken to optimize the utilization of resources.

RECOMMENDATIONS

This study suggests minimal manpower for testing and cleaning, emphasizing the need for evidence-based management of resources for higher cost-effectiveness. Less cost is associated with less usage of human resources. Therefore, the introduction of cost reduction strategies through the awareness of the health staff and the patients will help to reduce the cost of care at large. Furthermore, the maintenance and the planning of equipment on time will also help to reduce the cost of laboratory investigations. Improving the hospital record-keeping system is also recommended. Such measures will improve the outputs of costing studies providing more reliable information for decision-making.

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Utilization, accessibility, and availability of circulars at the office of the Provincial Directorate of Health Services, Western Province

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ABSTRACT

Information-seeking behavior and information utilization are two vital concepts that can be assessed to measure the usage of circulars and guidelines in organizations. Information accessibility and availability are two main components of information utilization. This descriptive cross-sectional study assesses the utilization, accessibility, and availability of circulars among senior and middle-level managers of the PDHS office in Western Province. Senior and middle-level managers constituted the study population. Quantitative method was utilized in achieving the objectives. Respondents were assessed through pre-validated questionnaires on the variables of information utilization and case scenario-based model. Accordingly, it was identified that the awareness and capability of information utilization in their daily routines were high among senior and middle-level managers (over 3). The overall performance in the case scenarios was very low (average of 22). Although the most preferred mode of keeping information was the circular file, the majority were in the belief that an alternative method to improve availability and accessibility is useful in improving information utilization in decision-making.

INTRODUCTION

Rule of law and accountability are the main components of good governance. Circulars and other guidelines are part of it as transparency and openness allow others to know what is happening[1]. Regulations and procedures give information to make decisions transparently and confidently leaving a lesser opportunity for doubt. Utilization of information can be assessed by evaluating the availability (presence for immediate use) and the accessibility (ease of use)[3]. This indicates the importance of circulars and other related documents in the context of good governance.

A significant number of circulars are issued by central and provincial authorities in Sri Lanka. These officials issue circulars on a wide range of subjects. Many of the circulars are issued on financial management, general administration, human resource management, and various technical aspects of the preventive and curative sectors of health. Studying the utilization of circulars in routine work and decision-making in the government health sector is the research problem addressed by this study.

General objective

To assess the perceptions on the utilization of circulars in decision-making and the level of

utilization of circulars in selected subject areas, by senior and middle-level managers at the Provincial Directorate of Health Services (PDHS) office of Western Province

Specific objectives

1.To assess the perceptions on utilization of circulars among senior and middle-level managers in decision making

2.To assess the availability and accessibility to circulars among senior and middle-level managers of specified divisions in the PDHS office, through case scenarios based on circulars issued since the year 2000.

METHODOLOGY

This is a cross-sectional descriptive study. The study Setting was the PDHS office of Western Province. All senior managers (n_1=4) at the office except the Provincial Director and all the middle-level managers, management assistants, and development officers (n_2=24) were included in the study population (n_1+n_2=28). A self-administered pre-validated questionnaire was used to assess the perceptions of the utilization of circulars.

The questionnaire consisted of three sections:

1.Section one- Socio-demographic features

2.Section two- Perceptions on utilization of circulars

3.Section three- Case scenario based on circulars

Variables affecting information utilization were identified through relevant literature[3,4,5,6,7] and further refined by the opinion of the subject experts. Questions were peer-reviewed before pretesting. Case scenarios were developed to assess the utilization of circulars and all of those were developed prior to the commencement of the study. Questions were based on the facts in

Table 1: Socio-Demographic Features of the respondents

Description				
Age	25- 35	36- 45		>46
	17 (60.7)	08 (28.6)		03 (10.6)
Gender	Female (%)			Male (%)
	23 (82.1)			05 (17.9)
Section	F	A	E	P
	07 (25%)	08 (28.6%)	07 (25%)	06 (21.4%)
Duration in the present station/ post	5 or <5years	6- 10		>10
	23 (82.1%)	03 (10.7%)		02 (7.1%)

F- Financial A- Administration E- Establishment P- Planning

the circulars. Statistical analysis of the data was performed utilizing SPSS version 21. Ethical clearance was obtained from the Ethics Board of the Colombo South Teaching Hospital (CSTH), Kalubowila.

RESULTS

Socio-demographic features

There were 28 senior and middle-level managers who took part in the study. The socio-demographic characteristics are summarized in Table 1.

Over sixty percent (n=17) of the participants of this study belong to the age group of 25 to 35 years. Most of the middle and upper-level managerial staff were females (80%). An equal distribution of officers was observed between the four main sections (Planning, Finance, Establishment, and Administration) of the PDHS office. The percentage of the officers possessing less than 5 years of working experience at the office was nearly 80%.

Perceptions on utilization of information (circulars)

The results of the assessment of the information-seeking behavior of the senior and mid-level officials of the PDHS office are summarized in Table2.

Many of the respondents were aware of the usefulness of circulars in their work. The average means of all concerned variables were above 3. It indicated that the respondents positively agreed with those attributes.

The most preferred form of searching for a circular was the circular file (78%), and the

Table 2: Information (circular) seeking behavior of the senior and middle-level officials

Variable	Number	*Mean	Standard Deviation
Circulars are important for daily duties	26	3.92	1.164
Had Occasions to refer circulars	25	3.88	0.781
Affect the efficiency of job	26	3.92	1.354

**Mean value of the Likert scale. The range of the scale1 to 5*

Table 3: Preferred source of i nformation sought by the middle and senior -level managers

Variable	Number responded	Positive response (%)
Internet	27	19 (67.5)
Refer circular file	26	22 (78.0)
Search in record room	21	13 (46.0)
Inquire a colleague	24	20 (71.0)

Table 4: Employee perception over the dimensions of circular availability and accessibility

Indicator	Variable	Number	Mean	Standard deviation
Availability	Availability of circulars in the office of PDHS	26	3.15	1.008
	Availability of circular files	21	3.05	.805
	Organized system is available	21	2.00	1.095
	Adequate space to keep circulars	26	2.92	1.197
	Overall availability	20	11.95/20	2.929
Accessibility	Ease of use	24	2.38	1.408
	Distance to the source	21	2.52	1.569
	Available on the internet	22	4.23	.752
	Overall accessibility	20	9.4/15	3.18
Overall Utilization of information			21.7/35	5.6

**Mean value of the Likert scale. The range of the scale 1 to 5*

least preferred form was searching for it in the record room (46%). A significant proportion of officials preferred to inquire from a colleague (71%).

The most preferred form of searching for a circular was the circular file (78%), and the least preferred form was searching for it in the record room (46%). A significant proportion of officials preferred to inquire from a colleague (71%).

The mean value for the necessity of an alternative method to maintain and store circulars was 3.43. It denotes neither agrees nor disagrees kind of conclusion at the end. On the other hand, the view to keep circulars available on the internet received a very strong positive response ($\bar{x}$= 4.33).

Case scenarios

Only seven officials responded to the given case scenario, and all scored low marks.

DISCUSSION

This project mainly concentrated on the utilization of information by improving the accessibility of circulars in decision-making. The information-seeking behavior was

Table 5: Respondents'view to improve theinformationutilization

Variable	Number	Mean	Standard deviation
Need alternative method	21	3.43	1.502
Good to keep in internet	24	4.33	1.049

**Mean value of the Likert scale. The range of the scale 1 to 5*

Table 6: Average marks obtained for the case scenarios

Section	Marks		
	<35%	36-75%	>76%
Finance	02	-	-
Establishment	01	-	-
Administration	01	-	-
Planning	03	-	-
All case scenarios	n= 7, $\bar{x}$ =22, SD= 9.93		

checked via three variables and all the attributes scored a mean value exceeding 3, thus indicating that the respondents were well aware of the usefulness of the knowledge about circulars in their routine work. Most of them perceived that knowledge about the circulars is important in their daily duties and improves the efficiency of their work. A similar kind of attribute was studied from a different perspective in Nigeria. They studied whether there is any relationship between educational qualifications and decision-making based on information[4]. The same study investigated information accessibility and utilization as factors influencing the decision-making of managers in commercial banks in Nigeria. The study revealed that there was a significant positive relationship between academic qualifications and information utilization in decision-making.

The most preferred path to seeking information was searching in the circular file (78%). They had an equal perception that the circulars could be accessible through the internet too (67.5%). The percentage who inquired from a colleague was 71%. The perceived availability of information at the PDHS office was not satisfactory as per the results. Indicators that checked for availability scored below average. The mean score attributable to availability was 2.9. The lowest mean was observed ($\bar{x}$=2) in 'having an organized system to keep circulars.'

The utilization of the available information was also poor. It was reflected in the average marks obtained for the case scenarios. Although almost an average rate of response was observed ($\bar{x}$=3) for the availability of circular files, it was noticed that a significant proportion of provincial and central-level circulars were not available at the office of PDHS. Accessibility was tested by three variables and the highest mean was observed in accessing the internet ($\bar{x}$=4.2), while the lowest mean was observed in the ease of use of the available circulars ($\bar{x}$=2.3). Accessibility of information is also an area of interest in research and several studies of engineers' information-seeking behavior have found that accessibility was the factor that influenced most of their selection of information sources[5]. A study by Raya in a group of engineers found that the most accessible information source was one that requires the least effort. Factors of accessibility were 'sources I know', 'saves time', and 'physical closeness'[5].

CONCLUSION AND RECOMMENDATIONS

Availability and accessibility of information were poor even though the perception of information utilization was high among the senior and middle-level officers of the office of PDHS. The most preferred method in finding a circular is through circular files which are expected to maintain by the

management assistants. Respondents believed that having alternative methods to improve circular availability was appropriate, preferably on an internet-based platform. Therefore, it is recommended that the respective administrative authorities pay due attention to that regard. To establish good governance practices in the health sector, decisions need to be transparent and yet based on valid information. Circulars are one form of information used in decision-making. Thus, IT-based circular inventory is recommended for better accessibility of information.

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Reviewing triage at a busy emergency department

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INTRODUCTION

Triage is used in Emergency Departments (EDs) to enable available resources to match emergency care demands[1]. Time for triage should be short so that patients' clinical complaints are evaluated as quickly as possible[2]. Managing the triage process involves the commitment of space, human resources, and processes to distribute patients timely to the appropriate ED areas. EDs have little control over the rate and number of patients presenting at their doorstep. ED triage systems worldwide vary in manner and implementation[1]. All subscribe to the concept of minimal waiting before being seen by the care team and require periodic reviews of their processes. Such a review was carried out at the ED of a large tertiary care hospital in Singapore in January 2020. We describe the review processes undertaken, their results, and measures suggested to improve the triage system.

METHODS

This review was conducted in three steps. First, documentation of ED processes was done over two weeks in January 2020 by documentation of 30 patient journeys. Second, a one-month period was spent observing triage processes, documenting issues, and conducting analyses of these. Flow diagrams and fishbone analysis were used to identify causes for long waiting and process times. Discussions were conducted with the triage nurses. Third, timings (from arrival at fever screening, start and end of fever screening, movement to triage waiting area, triage start, leaving triage area, and end of registration) were obtained from the Electronic Medical Records (EMR) system, for all patients, that month.

Data was captured in Excel. All patient data were anonymized. Simple data analysis was conducted. The procedures were approved by the Head of the Department as a quality audit of the ED's processes and exempted from the Institutional Research Board review.

RESULTS

Current ED process

The current processes comprising ED triage, from patient arrival to doctor consultation, are in four phases as follows:

A) From ED arrival till pre-fever-screening
   a. The patient arrives, either by ambulance, private transport or walks-in
   b. ED triage nurse evaluates whether patients are critically ill for immediate identification as P1
   c. The others join the queue for fever screening

B) Fever Screening in the ED
   a. This is performed by a trained Patient Care Assistant (PCA).

b. For those with a Singapore National Registration Identity Card (NRIC), this is scanned to allow a brief initial patient registration. The Department's EMR system auto-fills the patient's critical medical and patient demographic information. For those without an NRIC, the name, date of birth, gender, and citizenship are documented allowing temporary registration.

c. The PCA screens the patient for temperature, fever/flu-like symptoms, travel history, and symptoms.

d. Patients with infectious-like symptoms are isolated and escorted to the ED's Isolation Area (Fever Area).

e. The PCA documents the patient's next-of-kin (NOK) name, relationship, and contact number.

f. A patient queue number is then generated. There are three patient queues, a general queue, a fever queue, and a priority queue.

g. The queue number is given to the patient. Patients with an NRIC are directed to the triage waiting area. Those without are directed to the registration waiting area before being triaged.

C) Actions at Triage Area

a. The triage nurse calls the patient by queue number. Priority patients are triaged earlier. The nurse confirms the patient's identity by checking two identifiers (name, NRIC, or queue number).

b. Questions asked by the triage nurse include chief complaints, fall risk, pain scale, recent travel history, drug allergy, and previous medical history. If a drug allergy is recognized, a red tag is attached to the patient's wrist. For fall risk, a yellow tag is added. If none of these, a

Table 1: Emergency Department Patient Triage Categories, Mode of Arrival and NRIC Status

Triage Category	Number of Patients n (%)	Mode of Arrival			NRIC Status	
		Emergency Ambulance n (%)	Non-emergency Ambulance n (%)	Other Transport n (%)	With NRIC* n (%)	Without NRIC* n (%)
Priority 1	1387 (13.0%)	541 (37.1%)	72 (17.3%)	774 (8.8%)	1276 (14.4%)	111 (6.3%)
Priority 2 • P2** • P2 Fever***	5955 (56.0%) 5814 141	864 (59.3%)	310 (74.7%)	4781 (54.6%)	5204 (58.7%)	751 (42.5%)
Priority 3 • P3# • P3 Fever##	3250 (30.6%) 2932 318	52 (3.6%)	33 (8.0%)	3165 (36.1%)	2364 (26.7%)	886 (50.1%)
Priority 4	43 (0.4%)	0	0	43 (0.5%)	23 (0.2%)	20 (1.1%)
TOTAL	**10635 (100%)**	**1457 (100%)**	**415 (100%)**	**8763 (100%)**	**8867 (100%)**	**1768 (100%)**

**NRIC = National Registration identity card (Those without NRIC were usually non-citizens, work-permit holders, and tourists), **P2 = Priority 2, ***P2 Fever = P2 patients triaged to Fever Area, #P3 = Priority 3, ##P3 Fever = P3 patients triaged to Fever Area*

white wrist tag is used.

c. The nurse measures the patient's vital signs (pulse rate, respiratory rate, blood pressure, oxygen saturation, and pain score).

d. Subsequently, the triage category is determined (whether P1, 2, 3, or 4). P1 and P2 patients are immediately placed on a trolley and wheeled into these areas.

e. Indicated procedures, e.g. an electrocardiogram (ECG), nebulization, bandaging, splinting of wounds, or glucose drinks if low blood sugar, would be done before the patient is taken to appropriate care areas.

f. The Triage Nurse then passes a sheet explaining the ED journey, and queue number to the patient places the patient's folder with patient stickers on the Registration Counter and indicates to the patient how to get to the Ambulatory area after completing registration.

D) Patient registration begins when the Registration counter staff calls either the patient or NOK (in cases of patients in P1 or P2). Counter staff conducts the final stages of registration and financial counselling, if any, at the patient's bedside for those in the trolley area without NOKs. Counter staff update patient particulars, print additional sticky labels, and direct patients to the waiting area to await doctor consultation.

Characteristics of patients seen

Table 1 shows patient numbers seen by triage category, fever status, mode of arrival, and NRIC status. ECGs were done at Triage for 59 % of ambulance patients versus 15% of self-referrals.

Time management for the triage process

Table 2 shows mean waiting and process times from fever screening until completion of patient registration and triage. There was no significant difference for this phase

Table 2: Time Management of the ED Patient from arrival to presentation at patient care area

Process	Median Time (minutes)	95th Percentile Time (minutes)
Waiting for Fever Screening	0	1.2
Conduct of Fever Screening	2.0	3.1
Waiting for Triage	6.0	19.2
Conduct of Triage	7.0	19.5 (43.0)
Waiting for Patient Registration (for NRIC Holders)	1.5	14.8
Conduct of Patient Registration (for NRIC Holders)	2.0	5.0
Total waiting time for NRIC Holders	18.5	62.8
Waiting for Patient Registration (non - NRIC Holders)	3.0	5.0
Conduct of Patient Registration (non - NRIC Holders)	2.0	5.0
Total Waiting time for non -NRIC Holders	20.0	53.0

amongst patients eventually sent to the P2, 3, or 4 areas.

Triage issues and concerns identified

The following were observed during the various processes:

At Fever Screening Area

1. Collection of non-fever related information, such as chest pain, stroke, or pain elsewhere
2. Some patients were converted to a trolley during fever screening before the conduct of triage
3. General information on the location of facilities and advice to patients / NOKs making enquiries was being provided by screening staff
4. Fever screening staff sometimes left their desk to provide patients directions, even when the screening area was full.

At Triage Area

1. Triage nurses were doing many ECGs, and sometimes accompanying patients to other care areas.
2. Nurses were taking detailed clinical histories, accompanying patients to the registration area, and helping patients complete the registration process.

Root Cause Analysis

The process flow diagrams and fishbone analysis identified factors that contributed to waiting and process times. Four areas that contributed to delays in the overall triage process were considered, viz. people, place, policy, and process. The findings were as follows:

1. People

a. Frequent absence of Triage Nurse leader owing to being required in other ED areas

b. Assuming multiple roles, some not triage related, e.g. information provision and dissemination

c. Understaffing of nurses and porters resulting in nurses assuming portering functions and slowing down the triage process, especially during peak periods

2. Place

a. Space at triage did not allow adequate social distancing of potentially infectious patients

b. Not all four triage cubicles functioned fully, owing to nurses frequently leaving to perform other duties

c. Insufficient seating for patients and NOK, especially during peak periods.

d. No proper Welcome/Information process at the ED entrance leading to patients and NOK making frequent enquiries from fever screening and triage staff.

e. Direction signages for patients / NOK in the area are inadequate to smoothly guide spontaneous patient movement.

f. Insufficient wheelchairs for patients with walking difficulty.

3. Policy

a. Variations in triage decision-making were noted amongst nurses

b. No system of regular audit for the triage process

4. Process

a. Patients arriving at the ED were providing illness-related information at least twice, at Triage and again at the patient care area.

b. ECGs, once done, were sent to the P2 area by the triage nurse for checking by a senior ED physician with the nurse walking from Triage to P2 many times.

c. The ED did not keep spares to replace faulty equipment in Triage at short notice.

DISCUSSION

The ED had made previous attempts to better understand and improve triage processes[4]. Other countries have also tried to address waiting time issues at their EDs[5,6,7,8]. These identified minimizing the need for patients to repeat themselves to multiple sets of clinical staff and minimizing waiting before a doctor evaluates the patient. One needs to consider whether patients may self-enter, electronically, their clinical complaints so that further questioning by clinical staff would be to verify initially available information and ask necessary related additional questions.

To address fluctuations in patient arrival patterns, careful manpower planning for regular staffing and surge capacity flexibility will be required. Manpower requirements may be determined using process-based time norms adjusted with mathematical modeling and queuing theory applications in a simulated environment[9, 10, 11, 12]. Nurses in Triage should be focused on their triage roles and not be distracted by other duties. Busy EDs may need the constant presence of a senior Nurse leader to oversee triage processes daily.

EDs are often regarded as the shop-window of the hospital. There is a need to consider a Welcome/Information desk at the ED entrance to not only serve as a welcome counter[12] but also provide queue numbers, information to all arrivals on ED processes, and better ensure no patient is left wondering where to go next. Signages for patients and NOKs should be reviewed for greater clarity on the triage process and patient registration requirements.

The need to ask non-fever related questions during fever screening[13] requires review to minimize screening time.

Traditional ED patient triage systems are nurse-based. Some EDs have tried senior Emergency Physician (EP) led triage systems[14, 15, 16]. These usually include teams of 1 senior EP with 2 senior nurses who take a quick history, perform a rapid and focused physical examination, order initial investigations and treatments to relieve pain, breathlessness, and other acute symptoms, administer these and move patients to the next area in the ED based on clinical priority. These require physical, human, and electronic infrastructural changes and hold the promise of shorter waiting times for doctor consultation, earlier initiation of investigations and treatments, earlier resolution of distressing symptoms, and a shorter time in the ED with the potential to reduce ED overcrowding. Nurse practitioner models have been tried in other jurisdictions with varying success[17,18].

With ambulances bringing in a significant proportion of ill patients to the ED, we should consider bringing forward and conducting fever screening, triaging and vital sign measurements in ambulances while on the

way to the hospital[19]. If feasible, the impact on time savings in the ED is potentially significant.

Patients should not be queueing up for registration. Instead, decentralizing counter staff to register either at triage, while being seen by the doctor, or when waiting for procedures may be time-saving. Patients want seamless bedside registration in EDs[20]. Unlike triage, patient registration not being mission-critical, but an administrative necessity, can be built into the overall patient care function, rather than consume precious patient time. Finally, triage should not be delayed for patients without local NRICs if we consider it time critical.

This review which was done in one of the world's best emergency care systems shows many identified interventions which can be practiced in Sri Lanka. Emergency care is a growing field in Sri Lanka. Experience gained during this process of auditing can be applied for upgrading current emergency care services provided at the institutional level.

CONCLUSIONS

In both emergency care setups in Singapore and Sri Lanka, periodic reviews and audits of triage processes are useful to increase their functional efficiency and better ensure a smoother and hassle-free experience for patients arriving at the ED. The availability of patient flow timings, close observations of current practice, and interviews with stakeholders all help to provide the ED with tools to initiate change and speed up emergency patient care.

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Suicide prevention strategies: Is Sri Lanka on the right track?

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ABSTRACT

Suicide is a severe, yet avoidable, public health issue that affects people all around the world, including Sri Lanka. Despite many initial measures to address the issue, Sri Lanka's suicide rate remains high, keeping it in second place in the region. As a result, it is time to revisit them and assess their contribution to the country's suicide prevention efforts. This perspective paper examines current Sri Lankan suicide prevention strategies and compares them to available standard approaches in order to provide authors' perspectives on how to improve the situation using available theoretical standard approaches and practical evidence from England.

INTRODUCTION

According to global epidemiological data, suicide is considered a serious international public health issue among the twenty-leading causes of death. That is above the deaths due to war and homicides, malaria, or breast cancer, where we usually pay more attention[1]. More importantly, suicide has become one of the three leading causes of death among the 14–15 age group and the second leading cause of death among the 15–19 age group[2]. The global average age-standardized suicide rate in 2016 was 10.5 per 100 000 population[1]. In 2019, it was 72.4 and 40.3 in Lesotho and Guyana respectively, where they recorded the peak values. It was 7.9 and 14 per 100 000 population in the UK and Sri Lanka respectively[3].

Worldwide, the majority (79%) of suicide deaths are reported from low and middle-income countries attributed to the fact that they occupy 84% of the world population[1]. However, developing countries are less prepared, except in a few pockets, than developed countries to address the issue[4]. Sri Lanka can be proud of being the first developing country to have a national suicide plan as early as 1997, as a response to its early peak in suicide rates during the early and mid-nineties[5]. In 1995, Sri Lanka became the top of suicides in the world[6]. The situation in the country improved as a result of this plan, and the ending of the conflict situation. However, Sri Lanka's suicide rate remains higher than the average of low and middle-income countries, ranking second among the SEARO countries, having India ahead with a rate of 16.3[3]. It indicates the need for close attention by relevant authorities as a major public health issue.

Approaches to address the problem

WHO has established suicide prevention as a global target recognizing it as a priority issue. As a result, the reduction of suicides is used as an indicator in the United Nations' SDG; reduction of premature mortality due to non-communicable diseases under target 3.4[7].

In 2005, experts from 15 countries conducted a systematic review and identified the following areas for suicide prevention[8].

1. Education and awareness for the general public and professionals
2. Introducing and use of tools to identify individuals at risk
3. Treatment for psychiatric disorders
4. Restriction of access to lethal means
5. Responsible media reporting

WHO introduced the following strategies to manage suicides at different levels[1].

Strategies to address the population level are:

1. Restrict access to means of self-harm and suicide
2. Develop policies to reduce the harmful use of alcohol
3. Assist and encourage the media to follow responsible reporting practices of suicide

Strategies for vulnerable sub-population at risk:

1. Gatekeeping training
2. Mobilizing community
3. Using trained survivors as champions

Strategies for the prevention of suicide at an individual level:

1. Identification and treatment of mental disorders
2. Management of persons who attempted suicide or who are at risk
3. Improving case registration and conducting research
4. Monitoring and evaluation of the ongoing program

PERSPECTIVE

How far has the country progressed?

Sri Lanka as the first country in the developing world to have a national plan to prevent suicide has taken policy decisions and initiated strategies to reduce suicides in the country. In 1997, a presidential committee was appointed to address the issue. With the recommendations of the committee, a national plan for suicide prevention was developed and operationalized. The plan addresses the problem at the population level as well as the high-risk group level.

The population-level strategies include creating a culture that discourages suicide, changing laws that act as a barrier to suicide prevention efforts such as criminalizing suicide, and initiating life skills programs in schools. Attempts of suicide were decriminalized in 1998. High-risk pesticides were banned.

As strategies that address high-risk groups, improving the mental health of young and elderly populations, establishing mechanisms to intervene and assist those individuals and families who are in need, and enabling non-governmental organizations like "Sumithrayo", can be stated[5]. However, with the conclusion of the presidential committee in late 2000, the functional

capacity of the plan and the attention of authorities seemed to diminish raising concerns about the sustainability of the planned actions[4,5].

In 2005, Sri Lanka unveiled its mental health policy. The objectives of the policy were to improve the mental health and psychological well-being of the citizens of Sri Lanka and to treat mental disorders in an efficient and holistic manner[9]. In 2015, Sri Lanka declare a national policy and strategy on the health of young persons. Promotion of psychosocial and mental well-being: preventing and managing psychosocial issues and mental illnesses, preventing suicide and self-harm, and providing counseling and support services for affected young people were considered major activities under the first strategy[10].

Later, in 2016, Sri Lanka introduced the national policy on alcohol control, which focuses on direct risks for users of alcohol and indirect risks for families and society due to its effects on household income, child abuse, and violence. Under priority policy area 4, it is clearly mentioned that protecting all populations from the consequences of alcohol use is a priority. The Director of Mental Health, under the guidance of DGHS, coordinates the implementation of the policy actions[11].

In 2016, experts in the mental health field developed a culturally appropriate guideline on providing first aid to a person at risk of suicide based on a study carried out in Sri Lanka. These guidelines are freely accessible. They can be used in suicide prevention activities as a basis for training gatekeepers[12]. Gatekeepers can be close family members or friends of at-risk individuals. Professionals like PHIs, midwives, schoolteachers, prison and military officers; prominent and reputed community members such as religious leaders, leaders of village committees, or charity organizations who are in frequent contact with at-risk individuals can also act as gatekeepers[8,13]. Recognizing pesticide vendors as gatekeepers, training was carried out for them to cover some pockets[14].

Sri Lanka recently declared (2022) a new mental health policy to be implemented from 2020 to 2030. It focuses on strengthening leadership and research, expanding mental health services, human resource development, and community empowerment[15].

How far do suicide prevention and management activities still have to go?

As previously stated, suicide claims more lives than some other public health issues in Sri Lanka and therefore Sri Lanka has initiated substantial measures to reduce suicides. However, the functional sustainability of existing programs is uncertain. The necessary modifications, amendments, and improvements are in doubt. To fill the gaps in the approaches to prevent suicides, Sri Lanka needs to expand its services.

When it comes to early detection and care of at-risk individuals the community level needs to be expanded and improved. There is currently no formal way to assist victim families in Sri Lanka. Authorities must prioritize the establishment of this service because they are more likely to experience mental health issues and suicidal thoughts[16]. When the recently reported incidents are considered, developing a protocol to guide and encourage ethical and responsible media reporting of suicide-related incidents is critical. The accuracy and timeliness of data collection, as well as research on suicide-related topics, should be encouraged. Above all, monitoring and evaluating the ongoing program will help to improve its performance and outcomes.

In Sri Lanka, many policies have been enacted to address the prevention of suicide and associated risk factors. It is high time to revisit and reflect on those policies to see how far the objectives have been met after many years of implementation or whether they are making the expected contribution to reducing suicides in the country. The debate over the national alcohol control policy and the contradictory government activities is an example.

It is time to appoint a national and regional body to deal with the national suicide problem. It shall comprise all relevant stakeholders such as health authorities, representatives from the agriculture field, social service department, home affairs, education, police department, and volunteer organizations. Although some areas are covered by mental health programs, numerous other risk factors can lead to suicidal behavior such as socio-economic and cultural effects. Therefore, effective management necessitates multifaceted collaboration. The ongoing economic crisis and political unrest can influence the suicide rate. Thus, Sri Lanka must get prepared and equipped to deal with the impending threats.

Evidence of successful adaptation of the standard approach

In England, suicide is considered a major issue for society leading to life years lost. It is considered to have a significant impact on families and communities[17]. England published their national suicide prevention strategy in 2012, focusing on preventing suicide through a public health approach. By 2017, England's suicide rate had dropped significantly after a few years of its implementation[15].

The National Suicide Prevention Strategy Advisory Group (NSPSAG) which is advisory to the Department of Health and Social Care provides leadership and support to ensure the successful implementation of the strategy. Members of the body represent all relevant stakeholders, including politicians, professionals, and the general public. The National Suicide Prevention Strategy Delivery Group (NSPSDG) ensures consistent and coherent implementation of commitments to suicide and self-harm prevention programs through continuous monitoring[16].

The National Suicide Prevention Alliance (NSPA) works to unite all stakeholders to support those who have been bereaved by suicide. It receives funding from the Department of Health and Social Care to support its 115 organizational members and 129 individual supporters[16]. The NHS Long Term Plan (LTP) and the Five Year Forward View for Mental Health (FYFVMH) set the national target to reduce suicides in England.

The regional suicide prevention strategies establish six priorities as listed below. They are aligned with the national strategic priorities[18].

1. Reduce the risk of suicide in key high-risk groups

2. Tailor approaches to improve mental health and well-being in Kent and Medway

3. Reduce access to the means of suicide

4. Provide better information and support to those bereaved or affected by suicide

5. Support the media in delivering sensitive approaches to suicide and suicidal behavior

6. Support research, data collection, and monitoring

Every local area has its own ongoing or developing a multi-agency suicide prevention plan. For an instance, the following services are supposed to be provided by the Medway authorities: a 24/7 helpline, the Stay Alive App (for assisting the safety of oneself or others), a crisis text service "Shout", a free community suicide awareness training program, mental health first aid training including suicide prevention, local workplace suicide prevention program, a council funded by HUB recruits, training and developing of community mental health champions, appointing a council project officer to work on self-harm and a strategic plan for adolescents[18].

The respective Clinical Commissioning Group oversees the commissioning of mental health treatment services. Among many others, Crisis and Home Treatment teams, psychiatric hospital in-patient facilities, Accident and Emergency (A&E) Psychiatric Liaison services, talking therapies for people with low-intensity suicidal thoughts, and Safe Haven which provides a place for reassurance and emotional support for people, are some of the services available. Through the memoranda of understanding the respective statutory organizations in collaboration with voluntary organizations provide vital services for people within the volunteer community sector frameworks[18].

Sri Lanka attempts to address many identified gaps through its new mental health policy 2020-2030[15]. However, while implementing this new policy, attention should be drawn to successful practices adopted by other countries. Among many others, supporting bereaved families, training and developing community mental

health champions, developing a system to obtain community support, and developing a platform to obtain collaborative support from other government, non-governmental, and volunteer organizations, are some of them.

CONCLUSION

Suicide is a serious, continuing global public health issue that affects Sri Lanka as well. Despite numerous measures to address the problem, Sri Lanka's suicide rate remains high, keeping the country in second place in the region. Therefore, it is high time to revisit those measures and evaluate their impact on the country's suicide prevention efforts.

To improve the situation, monitoring and evaluating already implemented strategies, amending and modifying Sri Lanka's existing strategies based on standard theoretical approaches, and learning from the success stories of other countries can be recommended. Nevertheless, Sri Lanka can expect to have a high suicide rate due to the country's economic and political turbulence. Therefore, the formation of national and regional task forces to address the issue in a multisectoral approach would aid us in getting prepared and equipping ourselves to deal with the impending threats.

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Assessment of the process of minor repairs of hospital structures by the maintenance unit in De Soysa Hospital for Women: A Case Study

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EXECUTIVE SUMMARY

De Soysa Hospital for Women (DMH) is one of the oldest hospitals in Sri Lanka situated in the heart of Colombo. It is a specialized hospital for maternity care. Many services in the hospital are still operating in the old buildings constructed almost 100 years ago. This has led to the frequent occurrence of minor repairs which cost a fair portion of the recurrent budget of the hospital. This case study focused on studying the process of minor repairs completed by the maintenance unit in DMH. The objective of the study was to identify the key issues in the current process and to establish a mechanism to audit the process carried out by the maintenance unit of the hospital. The problem was further analyzed using problem analysis techniques. Designating a subject clerk in the establishment branch, implementing a job card system, and preparing a standard operating procedure for the minor repair process were found to be workable solutions for the existing problems.

INTRODUCTION

De Soysa Hospital for Women which is also known as De Soysa Maternity Hospital (DMH) is a government hospital that comes under the line Ministry. It is a specialized hospital for maternity and childcare and provides antenatal, intrapartum, and post-natal care for pregnant mothers and their babies. It also functions as a referral center for high-risk pregnant mothers and also provides fertility services to women who are expecting a pregnancy. DMH is a teaching facility for undergraduate and postgraduate medical, nursing, and midwifery students. It has a bed strength of 343 with an average bed occupancy rate of 62.3%.

Maintenance Units in Government Hospitals

From time-to-time hospital buildings, electrical systems, and plumbing systems may need minor repairs which could be easily addressed by the staff of the maintenance unit of a hospital. These repairs should be addressed promptly to ensure the smooth functioning of the institution and also to prevent further damage which can cause an enormous cost to the institution. Moreover, well-maintained buildings give a safe place for patient care and a better working environment for staff.

What is meant by maintenance?

Maintenance includes inspection, assessment, and carrying out necessary measures to sustain the intended functions. It helps to sustain uninterrupted operations by preventing damage due to natural agents or events, wear and tear effects, and other causes that can impair the working conditions of the premises.

The Maintenance work can be classified as:

a) Preventive maintenance
   This refers to the maintenance work that is done before occurring any defects or damage. It includes service maintenance attended periodically.
b) Corrective or remedial maintenance
   It is the maintenance that is done after the damage or defect occurs with a view to restoring its operations or usability.

What is Repair?

Repair is the technical aspect of rehabilitation. It refers to the modification of a structure partly or wholly, which is damaged in appearance or serviceability.

OBJECTIVE

DMH is one of the country's oldest hospitals, still operating in the oldest buildings built since its inception. One of the main constraints to the smooth operation of the hospital is the frequent occurrence of minor repairs. Therefore, the objectives of this case study were **t**o assess the process of minor repairs of the hospital carried out by the maintenance unit of the De Soysa Maternity Hospital, and to implement measures to improve it further.

METHODOLOGY

In this study, a problem-oriented analysis was made based on data collected through key informant interviews (with the Director, Administrative Officer, Accountant, respective subject clerks, In-charge of the maintenance unit, In-charge Nursing Officers of the wards/units), and observatory visits to identify the process of minor repairs conducted by the maintenance unit and the problems encountered in carrying out such work. The nominal group technique was used for problem identification, problem prioritization, and cause prioritization. A Fishbone diagram was used for root cause analysis. Peer group brainstorming sessions and a small literature review were conducted to come out with proposals for solutions.

Problem Analysis

There are four healthcare assistants working in the maintenance unit of the DMH who attend to minor repairs related to masonry, plumbing, electrical, welding, and carpentry. Petty cash imprest is used to fund minor repairs. Major repairs are usually identified in the latter part of the previous year, and required budgetary allocations are obtained from the Ministry of Health on an annual basis. Duties of the maintenance unit include:

1. Routine maintenance
2. Minor repairs
3. Guardianship of necessary tools
4. Giving estimates

The materials needed for repair are acquired from the general store which is manned by a storekeeper attached to the accounts department of DMH. Materials are purchased from the registered suppliers with or without calling for quotations depending on the cost of the material. Materials are issued to the maintenance work in H500, which is a mandatory issue order required to be maintained in the wards or units.

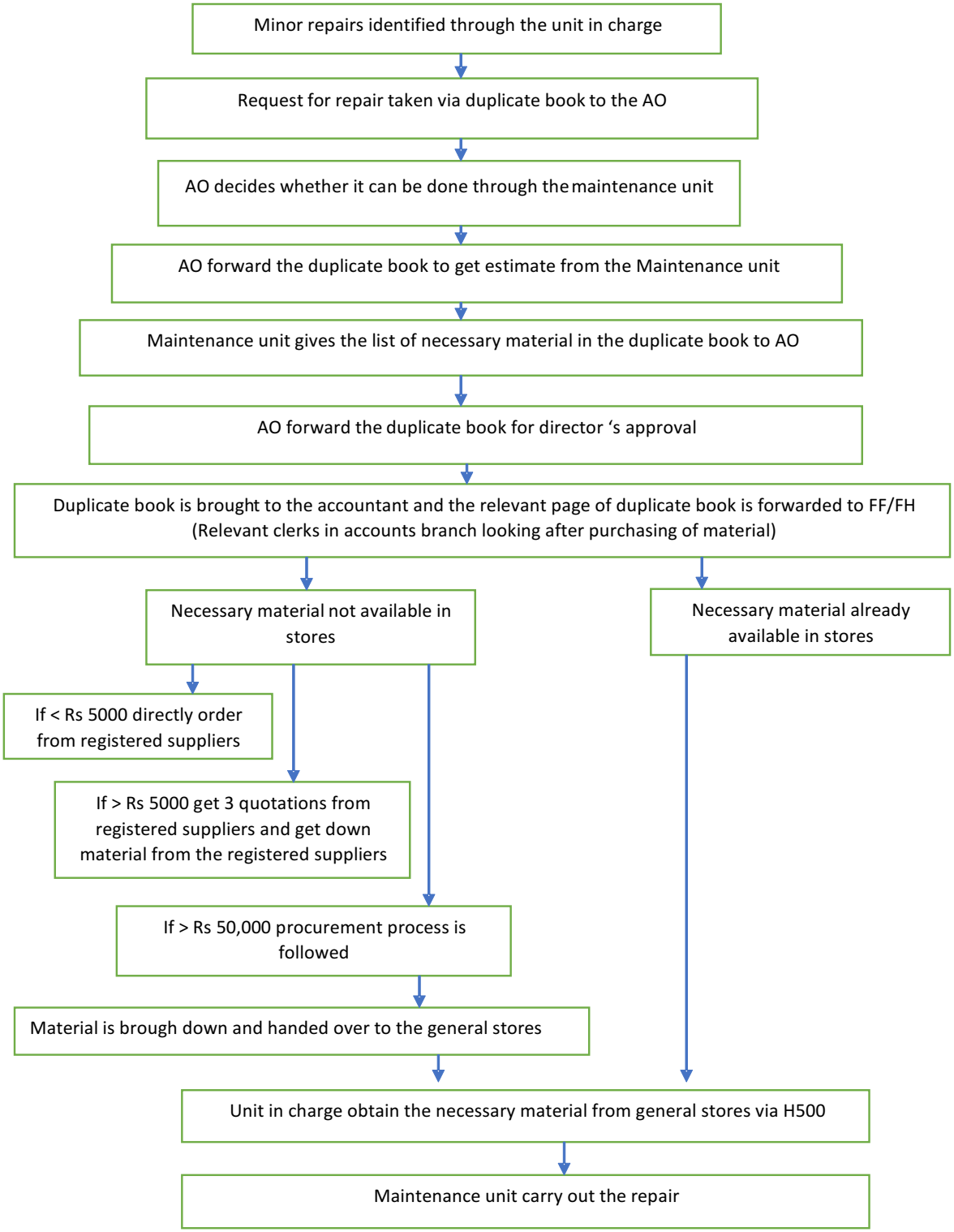
Process of minor repairs carried out by the maintenance unit of the DMH

Problem identification

The following problems were identified with respect to the process of minor repairs.

1. There is no subject clerk assigned in the establishment branch to handle minor repairs carried out by the maintenance unit.

Process of Minor repairs at DMH



2. The previously used job card was not in use anymore. Thus, there was no mechanism to follow up the minor repair process from start to end.
3. There was no appropriate mechanism to audit the minor repairs done for each unit.
4. There was no mechanism to track duplicate requests.
5. There was no mechanism to double-check and verify the estimates made by the maintenance staff.
6. Staff in the maintenance unit did not have appropriate vocational training in maintenance work.
7. Occurrence of minor repairs was frequent as the buildings are old.
8. Some requests for repairs were forwarded to the Director first and then to the Administrative Officer causing a delay in the process.
9. Delays in getting the repairs done.

Problem prioritization using a priority matrix

Considering the value to the user groups and the feasibility, the above key problems were prioritized.

Based on the prioritization, *"No appropriate mechanism to audit the minor repairs at DMH"* was considered for further analysis.

Root cause analysis

The underlying causes for the identified problem were analyzed using a fishbone diagram (Figure 1).

Policy

There is a Ministry policy to have a maintenance unit in each hospital with the existing staff with special skills. Therefore, in DMH, four workers in the maintenance unit are healthcareassistants who have some skills in electric, plumbing, carpentry, and welding work but are not appropriately trained or certified. There is no emphasis in government hospitals for audits of minor repairs carried out by the maintenance units. Minor repairs are frequent as many of the government structures are old and poorly maintained, accounting for a major portion of the recurrent expenditure. Also, there is a high chance of pilferage and other unlawful practices if these are not monitored. No proper audit guide is available for administrators on building maintenance in the hospital.

Table 1: Priority Matrix for problem prioritization

Problem	Factors		
	Technical feasibility	Impact	Prioritized value
- No clerk was assigned in the establishment branch to handle repairs	6	5	30
- No mechanism to follow the minor repair process from start to end	5	8	40
- No mechanism to audit the minor repairs	6	8	48
- There is no mechanism to track duplicate requests.	3	4	12
- Inability to verify estimates	3	5	15
- Unqualified workers in maintenance unit	3	7	21
- Occurrence of frequent minor repairs as the buildings are old.	2	6	12
- Unnecessary prolongation of the process due to duplication of work.	6	6	36
- Delay in getting the repairs done.	3	8	24

Place

DMH is one of the country's oldest hospitals, still operating in the oldest buildings built since its inception. Though new building complexes have been planned for the hospital, they would take another long period to come up. One of the main constraints for the smooth operation of the hospital is the frequent occurrence of minor repairs which must be dealt with until the new buildings are available.

Man

No designated subject clerk was available in the establishment branch to handle the minor repairs in the hospital. Therefore, maintaining records of requests made for repairs, repairs completed, and issues occurring during the minor repair process was not satisfactory.

Methods

The process followed for minor repairs was implicit and the steps were sometimes duplicated. Some units brought the duplicate book to the Director first and then get referred to the AO for further attention. Therefore duplication, and unnecessary motion, contributed to the delay of repairs.

Cause Prioritization

A priority Matrix was used for cause prioritization (Table 2).

The "Method" arm with a total mark of 50 became the most prioritized cause. Therefore, the interventions were designed to target its elements.

Proposed solutions

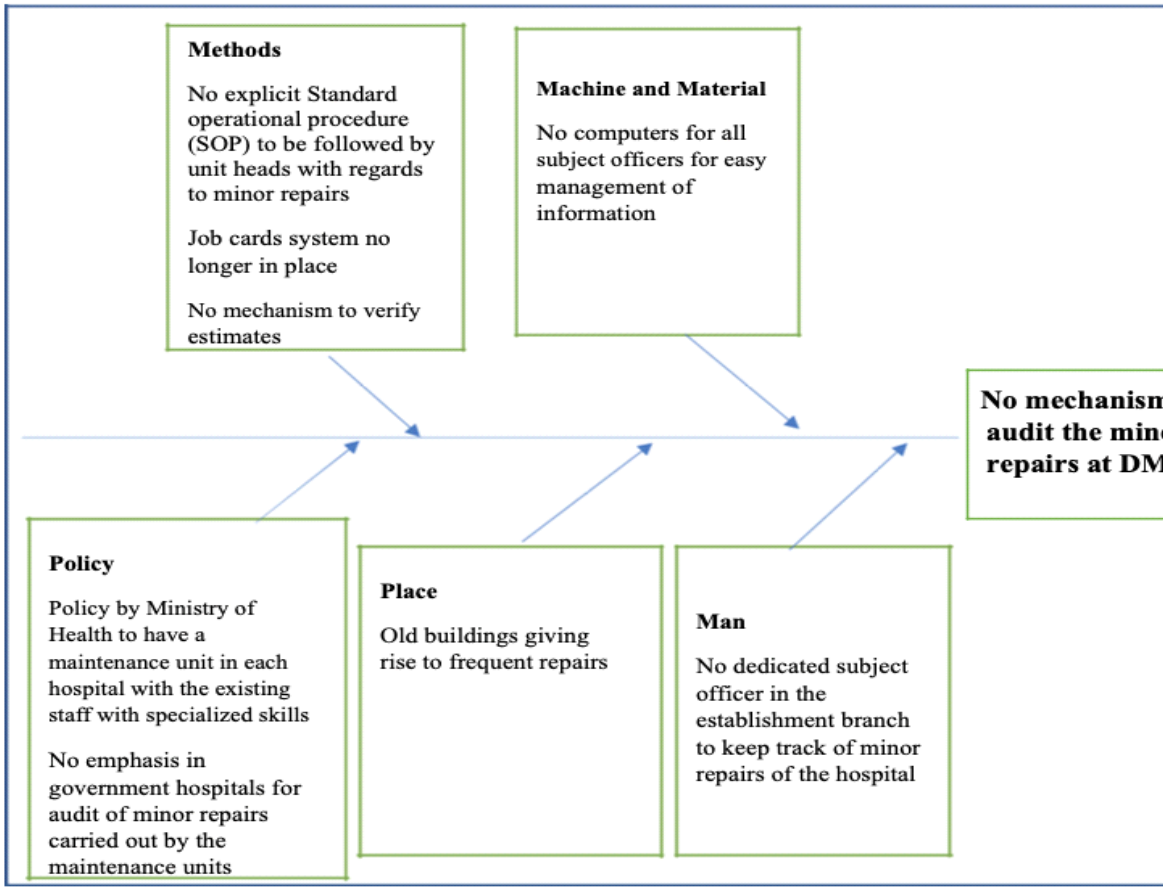


Figure 1: Fishbone diagram for problem analysis

Table 2: Priority Matrix for Cause prioritization

Causes identified	Aspects of causes (Marks Given out of 10)							Total
	Technical feasibility to intervene	Administrative feasibility	Financial Feasibility.	Practical possibility.	Impact factor	Time factor.	Acceptance	
Man	03	03	01	02	07	01	06	23
Policy	04	05	03	04	08	02	03	29
Place	01	01	01	02	01	01	02	09
Machine	07	08	08	05	06	07	05	46
Method	07	08	07	06	08	06	08	50

The following solutions were eventually developed and implemented.

1. Appointing a designated subject clerk in the establishment unit to keep a record of the minor repairs in the hospital and to carry out periodic audits.
2. Preparing an SOP for the process of minor repairs requested from the maintenance unit.
3. Introducing a job card.
4. Providing a computer for the subject clerk
5. Obtaining approval from the Ministry of Health for the repair estimates amounting to more than Rs 5000/=.

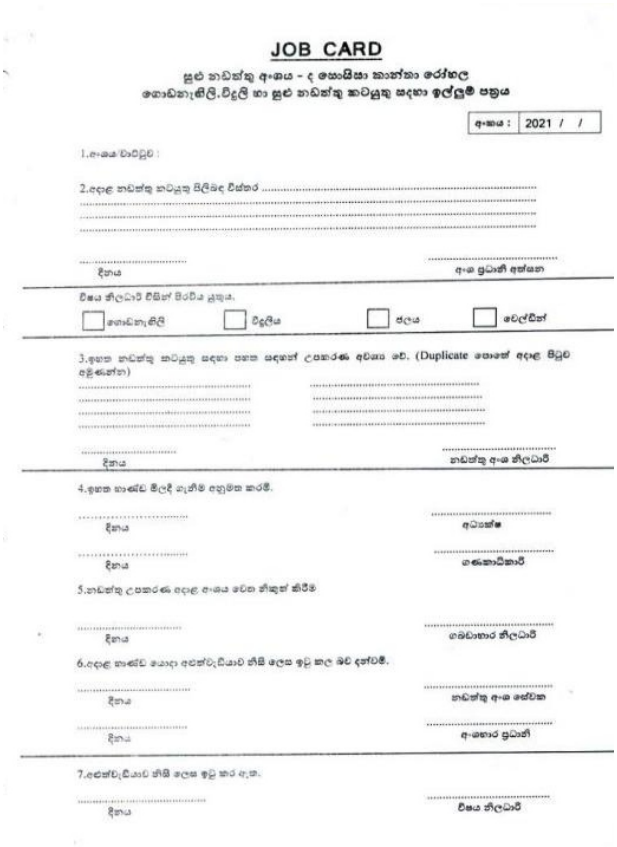

JOB CARD

Figure 2. The job card

Implementation

The following were implemented.

1. A job card was prepared with the consensus of the stakeholders and was introduced to the staff (Figure 2).

2.An SOP was developed for the minor repair process with the involvement of the stakeholders and introduced to the staff (Figure 3).

3.A designated subject clerk was appointed to handle the minor repairs carried out by the maintenance unit.

CONCLUSION

Not having an appropriate mechanism to

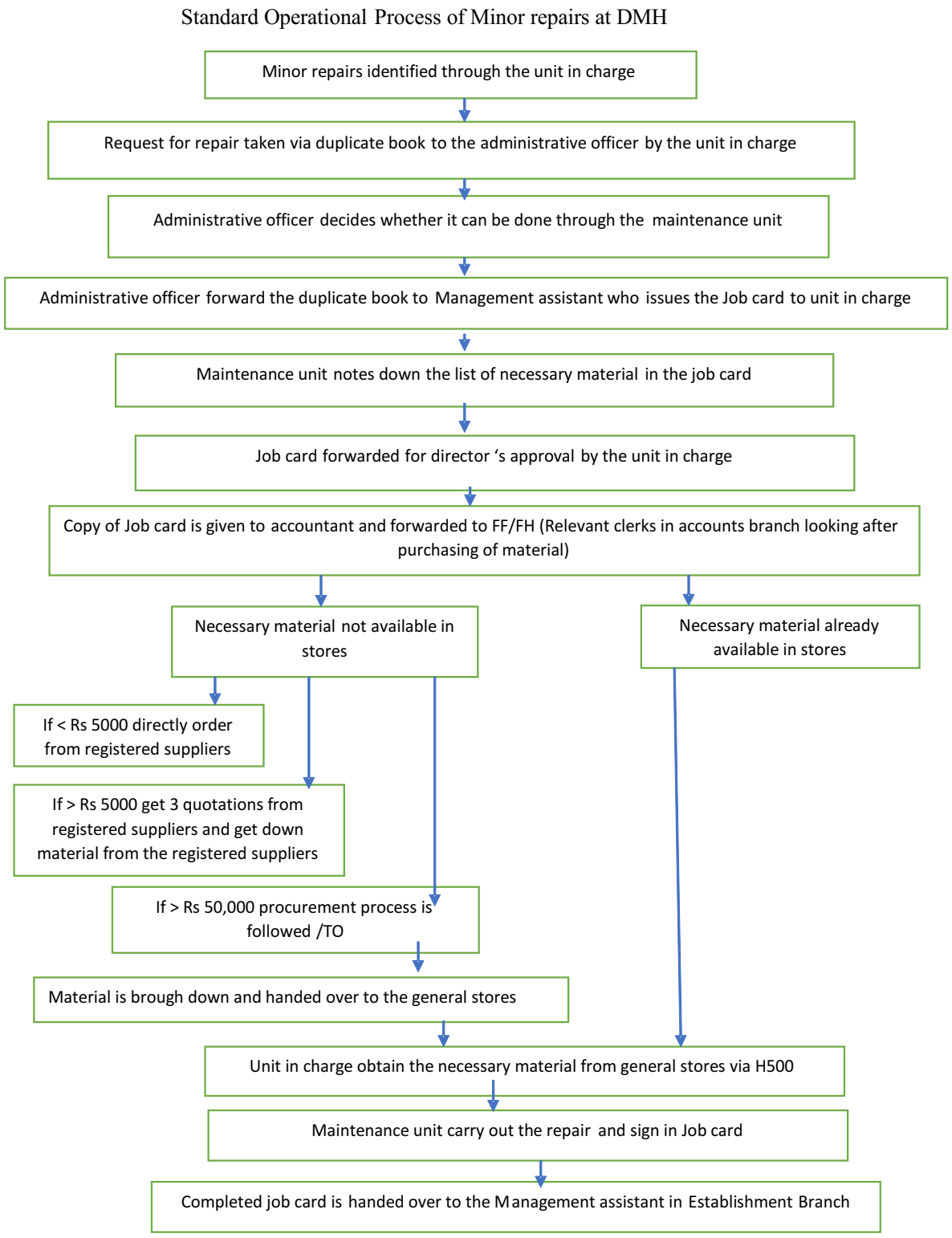


Figure 3: Standard Operational Procedure

audit the cost and the process of minor repairs carried out by the maintenance unit of DMH was found to be an issue. Appointing a designated subject clerk, introducing a job card system, and executing a standard operating procedure for minor repair process were found to be workable solutions for those problems and was successfully implemented at the De Soysa Maternity Hospital.

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