Factors Affecting Patient Safety Culture in Selected Base Hospitals inthe Regional Director of Health Services Division Kalmunai- Sri Lanka

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Abstract: *Patient safety is crucial to the quality of patient care and remains as a challenge. World Health Organization describes patient safety as a global issue, affecting all countries . Sri Lanka ,being a developing country, may encounter adverse events in health care system due to lack of infra structure, equipments, quality and supply of drugs and shortage of essential financial investments. By assessing the current patients safety culture in the selected Base Hospitals from the perspectives of the Healthcare Professional ,, one can identify the important issues regarding the quality service delivery of Sri Lankan Hospitals and the Government will be able to do remedial activities.*

Methodology*-Thiscross sectional descriptive study was carried out to assess the current patient safety culture of 317 Health Care Professionals , using a self administered questionnaire with seven dimension of Patient Safety Culture. Respondents consisted of Medical Officers (28.6%), Nursing officers (57.8%) and Para Medical Service & Supplementary to Medical Services (13.6%).Pearson correlation analysis was conducted to test statistical relationship between each of independents variables and overall patient safety culture. One way ANOVA was used for the mean difference in each 08 dimensions positive response scores among the selected Base Hospitals. Linear multivariate regressionanalysis will be conducted to examine the association between independents variable and controlling variables with Patient Safety Culture with mean percentage reporting a positive score as the dependent variables.****Finding****- The important factors contributing to the Patient Safety Culture are Just culture, Learning culture and Informed culture. According to the study, the maturity level of the all these selected Hospitals are at Reactive and Calculative stage.There is a severe lacking of Open culture and Reporting culture in the hospitals.* ***Originality /Value*** *-Patient Safety Culture is a multidimensional phenomenon and highly required to improve health status. This study identified some important factors which could be taken into consideration when a government designs for a cost effective quality service.*

Key words:*Adverse events, Patient Safety culture, Active and latent failures*

I. Introduction

Today's healthcare context is highly complex .Care is often delivered in a pressurized and fast moving environment, involving vast array of technology. Under these circumstances many individual decisions and judgments by Health Care Professionals (HCP) can go wrong. Sometime unintentional harm comes to patients during the clinical procedure or as a result of clinical decision. Error in the process of care can result in injury. Sometime harm that patients experience is so serious and people die [9].

In recent years world has realized the impact of patients safety problem in the healthcare organizations and has been responding with the great endeavor to tackle the issue [8]. World Health Organization (WHO) has defined patient's safety as 'The reduction of risk of unnecessary harm associated with healthcare to an acceptable minimum' [24]. Medication errors, deadly infections and poor communication still persist even 14 years after the landmark report of the Institute of Medicine, "To Err is Human; Building a safe health system", was released and patients safety come to forefront of world's attention [9]. A report reveals that an estimated 44,000 to 98,000 hospital patients die every year due to medical error [4].This issue has created concern among the policy markers ,administrators and researchers and consequently our understanding of patient safety continues to increase.

WHO lunched the World Alliance for Patients Safety Patient safety problems are believed to be veiled in healthcare organizations, especially in developing countries where impact of the problems is not known. Nobody knows the actual count of how many patients experience preventable harm due to inaccuracies in medical records and the reluctance of some providers to report mistakes [25].

Most of the adverse events resulted in minimal or transient disability but 14% caused or were implicated in the patient's death . The WHO reported an adverse event rate of about 10 % globally. In United

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Kingdom the cost of preventable adverse events is estimated to be £ 1000 million per annum in lost bed days alone [25].

Understanding different level of perception at different context and at different organizational set up will be necessary to recommend remedies accordingly.In order to do that, these organizations have become more engrossed in assessing the Patient Safety Culture which will help out to get information and data to formulate a plan[3].

Sri Lanka provides free healthcare services to all the citizen of this county and has achieved remarkable health outcomes . However there are certain drawbacks in the healthcare delivery systems, especially in the dimension of providing quality and safety healthcare services.

According to WHO, the rate of adverse incidents of healthcare system is very high in developing countries. Sri Lanka, being a developing country, encounters adverse events in healthcare system due to lack of infrastructures, equipment and drugs, poor performance of health care staff and severe shortage of essential financial investments [2].Sri Lanka ,being a developing country itself could be a reason for lack of safety culture in healthcare organizations. As in many counties, in Sri Lanka too, the number of malpractice litigations against care givers has increased dramatically [13].

The need for the Safety culture in the hospital is highly essential to provide quality service. Assessment and maintenance is crucial for the sustainability of the culture. This study examined the perception of Healthcare Professionals in Sri Lankan Hospitals , towards patient safety culture.

II. Literature review

Safety culture is one element of the broader construct of organizational culture (Leape, 2000).In many high reliability industries a great deal of research effort has gone into defining, specifying and measuring safety culture [6].

Patient safety culture is defined as 'The product of individual and group values, attitudes, competencies and patterns of behavior that determine the commitment to, and the style and proficiency of, an organization's health and safety programmes. Organizations with a positive safety culture are characterized by communications founded on mutual trust, by shared perceptions of the importance of safety, and by confidence in the efficacy of preventive measure'' [11].

In a landmark study by Leap et al, in 2000 found that more than two thirds of the adverse events they studied were preventable, 28% were due to the negligence of a health professional and 42% were caused by other factors. In developing countries also the situation is same. Theses unnecessary deaths and injuries can be prevented by practicing Patient Safety Culture [11].

Patient Safety Culture may be further defined by five key elements such as Informed Culture, Reporting culture, Just culture, Learning Culture and Open culture[17].

AOpen culture is one where the organization and the people in it are capable of adapting effectively to changing demands[16]. One of the most common root causes for medical errors is employees refrain from reporting the adverse events due to fear Therefore it is vital for healthcare organization to remove all barriers continually to open communication such as blaming, shaming and lack of feedback mechanism[7].

In a Just culture errors and unsafe acts will not be punished if the error is unintentional [16].**Just culture** balances the need to learn from mistakes and takes disciplinary action. The intention is to promote an atmosphere where any employee can openly discuss errors of commission or omission, process improvements, and or systems corrections without the fear of punishment [15].

Healthcare organizations need to trust their employees and technically establish a non- punitive environment. [22].

After an error occurs, health care organizations should investigate in order to identify weaknesses in the systems or processes and address them immediately [21].

Managerial commitment to safety was identified as the most strongly positive attribute of a patient safety culture Therefore, the commitment of healthcare organizations' leadership to patient safety issues is essential for an optimal patient safety culture [18].

Reporting culture means cultivating an atmosphere where people have confidence to report safety concerns without fear of blame. Employees must know that confidentiality will be maintained and that the information they submit will be acted upon, otherwise they will decide that there is no benefit in their reporting [16].

A learning culture means that an organization is able to learn from its mistakes and make changes. It will also ensure that people understand the safety management system processes at a personal level by root cause analysis[16].

Healthcare managers who accept the failures are bound to happen, proactively develops specific strategies to prevent them and promote a culture of safety for admitting and reporting errors, facilitates organizational learning and consequently ensure patient safety[5].

Handing over and taking over and transferring patientsis a process of transferring responsibility for care and the act of transmitting information about the patient.

Discontinuity of information transfer creates opportunities for error when clinical information is not accurately transferred between providers. [20].

In an informed culture the organization collects and analyses relevant data and actively disseminates safety information [16].

In health care system adverse events, errors and failures do occur. Patient safety culture is to prevent the preventable events. Adverse events are any injury or harm resulting from medical care. Resent study have shown that 8-12 % of adverse events take place in health system where half of them are preventable [23].

The root causes of harm are identified as Latent failure, Active failure, Organizational system failure and Technical failure.

James Reason's work on active and latent failure modes in organizations and his well-known 'Swiss Cheese' model of accident causation, explains the processes of how failures at multiple level finally leads to the accidents[16].

One of the most accepted is the AHRQ Hospital Survey on Patient Safety Culture. The instruments often assess the values, attitudes, behaviors and norms of organization members. They may also focus on perceptions of the organizational context, such as managerial priorities, adequacy of training and resources, or policies and procedures[14].

III. Method
This was a hospital based cross-sectional descriptive study.

3.1. Sampling and data collection
All the Health Care Professionals (406 in number) who work in above mentioned Hospitals were selected as Study sample as the population size was small. They include Medical Officers, Nursing Officers and Para medicals. The number of questionnaires distributed was 383 and 317 HCPs responded. Non response rate was 17.23%.

3.2. Study Instrument
The hospital survey on patients safety culture (HSOPSC) questionnaires developed by the Agencies for Health Research and Quality (AHRQ) was adopted for this study [1].. Developed questionnaire consisted of 08 variables with 35 indicators under five concepts and one outcome variables with 07 indicators. Five point Linkert scale also was changed to six points to avoid central tendency.Scale of agreement was strongly agreed to strongly disagree and scale of frequency was never to always. There were two focus group discussions were carried out at two hospitals to make above modification in questionnaire to suit Sri Lankan context.

There were two components in the questionnaire. Part 'A' component was on socio demographic characteristics. Part 'B' component was on the factors related to Patient Safety Culture. This part consisted of eight sub dimension of five variables and a section to assess overall Patient Safety Culture. Operationalization was done with 42 questions and 06 responses (Table 1).

Pre-Testing was done at Base Hospital in SriLanka. Self administered questionnaire were filled by the participants and confidentiality of the information obtained was assured.

3.3. Data Analysis-
Five percent of the questionnaires were re-entered and cross checked to test the reliability of the questionnaire. Cronbach'sα coefficient was calculated by using SPSS version 21to find out reliability of the questionnaire (Internal consistency) and Cronbach'sα coefficient was 0.701; hence questionnaire was considered as reliable.

SPSS version 21statistical software was used to perform statistical analysis on the survey data, descriptive statistic for the socio demographic data of the respondents and survey items of modified HSOPSC was analyzed.

Basic measurement such as Mean and Slandered Deviation were calculated.Pearson Correlation analysis was conducted to test statistical relationship between each of independents variables and dependents variable.One way ANOVA was used for the mean difference in each 06 dimensions positive response scores among the selected BHs.Linear Multivariate Regressionanalysis was conducted to examine the association between independents variable and controlling variables with PSC (dependents variable) with mean percentage reporting a positive score as the dependent variables.

Table 1 ;Operational Definitions of Variables

Variable	Definition
Patient safety culture	This is the dependents variable of this study that measures HCPs attitude, beliefs .and assumption that underlie how they are perceive and act upon safety issues within their hospitals.
Communication Openness	Ability of staff to give their opinion on negative decision and actions taken by higher authority
Feedback and communication about errors	Following an adverse event reporting, the relevant unit is informed of the error and discussed about the changers and prevention
Reporting of adverse events	How often adverse events and near misses are reported or what type of adverse events seen in the Hospital
Hospital Practices when Handing Over & Transferring Patients	How important patient care information is transferred across hospital units and shift changes
Hospital management support for patient safety	Extent to which the hospital management support patient safety and consider it a top priority
Non- punitive response to errors	Adverse event are not considered as an individual failure or kept in personal records
Organizational Learning and continuous improvement	Learning from mistakes and evaluate the positive changes
Teamwork within the unit	Whether the unit members work as a team to complete the work load, by sharing and helping each other with respect

IV. Analysis and Discussion

This study was carried out to assess the factors affecting Patient Safety Culture (PSC) in selected Base Hospitals in Sri Lanka. Five types of safety cultures and five socio demographic factors were studied.

Methodological aspects of the study indicate that three Hospitals were selected by random sampling technique. There were 405 HCPs working in those Hospitals and all were selected as study sample.Questionnaires were distributed among383 HCPs whosatisfied inclusion criteria .A total of 317 HCPs responded to the questionnaire giving a response rate of 82.76% .The response rate was 90% for a similar study done in Gambian Public Hospitals by MomodowBarrow[12].

Cronbach's alpha coefficient was 0.701 for the whole questionnaire with 42 questions. It has been indicated that 0.7 or more to be an acceptable reliability coefficient [19]. Accordingly, all the variables were of satisfactory level of reliability coefficient.

Socio- demographic profile of the respondents

There were three categories of HCPs, among them the majority of them were Nursing Officers (57.8%) and others were Medical Officers (28.7%) and Para Medical Supplementary to Medicine and Para Medical Services (13.6%).

Majority of respondents belonged to age group of 30-35 years (28.1%) and almost half of the respondents were below the age of 35 years (49.9%).

In this study Nursing Category was dominant(57.8 %) followed by the Medical Officers(28.6%) and 13.6% of them were Medical Supplementary to Medicine and Para Medical Services category . Majority of the HCPs were female (60.6%, n=192). Majority of respondents (45.1 %) were more than 10years ofservice in the department of health meanwhile 67.2% of the respondents were less than six years ofservice in the present station .

There are seven sub dimension for the variable 'Over all patient safety culture'. 'Patient safety is the absolute priority despite of heavy work load' had the highest means (5.46) 'There is a patient safety problem in the Hospital at present had lowest mean (2.97).' Staff in our unite get together and discuss about patient safety' had mean value of 4.98 and 'The system we use successfully prevent adverse events' had mean value of 4.97.

Majority of the HCPs believed that there were no patient safety problems in the hospital at present (mean2.99).This may be due to actually less number of adverse events occur or under reporting of adverse events

In Sri Lankan hospital Health care managers also involve in the discussion on quality improvement. Therefore the indicators 'Information sharing among staff'(5.04) and 'when events reported , management make changes and fed back' have more mean value(5.03).

This result indicated that HCPs perceived that patient safety culture in selected Sri Lankan BHs was reasonably good.

Table 2: Mean and Standard Deviation of Variables - Professional category

Variables	MO		NO		PSM&PMS	
	Pearson Correlation	**Sig. (1–tailed)**	**Pearson Correlation**	**Sig. (1–tailed)**	**Pearson Correlation**	**Sig. (1–tailed)**
	PSC perception	**PSC perception**	**PSC perception**	**PSC perception**	**PSC perception**	**PSC perception**
Open culture	-0.088	0.202	0.191	0.005	-0.160	0.152
Just Culture	0.171	0.052	0.230	0.001	-0.032	0.481
Reporting Culture	0.049	0.321	-0.061	0.205	0.192	0.108
Learning Culture	0.439	0.000	0.168	0.012	-0.245	0.057
Informed Culture	-0.105	0.161	0.324	0.000	-0.030	0.425

Source: Survey data

This study revealed that perception of overall PSC among the selected professional categories ,the NOs category (4.63±0.461) had the highest mean value followed byMOs (4.51±0.412) andPMS&PSM (4.45±0.358;Table .2). The statistical test revealed that the difference was significant too (p=0.016). .

When the overall perception of PSC was analyzed professional group wise NOs had a highest mean value (4.35±0.52) than others on Open culture (Table.2). NOs showed a higher correlation (cc=0.005) and non others It can be assumed that NOs in this study recognize the Open culture is important.

Overall in this study, variable Just Culture had a mean of 4.55±0.46. Its correlation with the Perception of PSC was weak (cc=0.197;p=0.00) and it was statistically significant .This indicated that though these three selected BHs had a significant level of Just Culture.

When perception of PSC was analyzed Professional category wise it had been found that PSM&PMS category had a higher mean on Reporting Culture (3.89±0.67) than the MOs (3.3.70±0.52) and NOs (3.38±0.76) . The PSM &PMS category also had a higher correlation (cc=0.108) followed by MOs (cc=0.049) and NOs category (cc=-0.061).All these correlations were not significant(p=0.32,0.02&0.10). This clearly indicated that there was a severe lack of Reporting culture in all these three healthcare organizations in this study(Tables .2).

Overall in this study, Informed Culturehad a mean value of 4.79±0.72 and its correlation with the perception of PSC was strongest (c=0.200,p=0.00) . This itself indicates the existence of rising PSC and positive attitude among HCPs.

V. Conclusions

The study finds out that the perception of Patient Safety Culture is moderate among the Health Care Professionals in all selected Base Hospitals . There are significant differences found in Professional category wise and period of service in the hospital wise.

The important factors contributing to the Patient Safety Culture are Just culture, Learning culture and Informed culture . According to the study, Open culture and Reporting culture are less perceived by the respondents. Study further indicates that overall in the study Informed culture and Just culture have high correlation with Patient Safety culture. It is noteworthy to observe that Reporting culture has the lowest correlation with the Patient Safety Culture. Therefore the maturity level of the all these selected Hospitals are at Reactive and Calculative stage.

Learning culture has the highest correlation with Patient Safety Culture for MOs . Further NOs the has highest correlation between Informed culture and Patient Safety Culture while PSM&PMS category has the highest correlation between Learning culture and Patient Safety Culture. Medical officers and Nursing officers feel that reporting of adverse events are poor in their hospitals. NOs value high the team work within the unit which has the great potential that can be tapped to provide enabling environment for implementation of positive Patient Safety Culture. NOs are better informed regarding the safety procedures and processes whatever available in the Hospital, though they don't have a well-developed system for patient safety as a whole.

VI. Recommendation

1. This study indicates that the effective system of reporting adverse events is not in place in the Hospitals. Reporting Culture is very much low when compare with other variables. Reporting can be improved through a confidential, un biased and user friendly reporting system. Voluntary reporting system should be encouraged. Advocacy and motivation of staff and placing a simple reporting system will create a reporting culture in the Hospital.
2. Another drawback in all three Hospitals is lack of Open culture. Reporting of adverse events needed to be backed by non punitive response to errors. Here the error should be seen as a learning opportunity. Errors are taken as events not by name of the employee who committed it. A no blame and non-punitive environment is needed to be developed.
3. There should be a proper communication and feedback method. Communication gap among employees, between leadership and subordinates and patients need to be addressed and rectified.

4. Though there is a strong Informed culture, individual perception between professional categories differs. Management has to look into the formation of reliable contingency plan in proactive manner. Management has to make measures to strengthen the perception Informed culture of MOs and PMS&PSM by filling the gap in the existing system .A radical management plan to tackle the issues of PMS&PSM is necessary as their perception on entire culture is very low when compare to other categories.

5. The total score for the learning culture is greater than the average ,but some of the indicators are low. Training programmes are required to educate the Health Care Professionals on patients' safety, practices of Japanese 5 "S" and its importance &benefits and safety procedures. Management makes an initiative to arrange lectures, providing learning material and setting up of model unit with safety component. These activities will reduce the errors at active ends..

Strengthening all the domains of patient safety will give raise to a better safety culture in the hospitals where the employees willingly participate in Total Quality Improvement.

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