Factors Influencing Continuous Quality Improvement Programme In Government Hospitals Of Sri Lanka

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Abstract: Health care systems are accountable to their patients and society to provide quality cost effective care and to seek ways to improve that care. By doing this, positive patient outcomes are ensured. Those factors, which affect the delivery of a good service have to be identified. It is important to determine whether the environment of an organization (type of hospitals) plays an important role in determining the implementation of quality improvement programmes **Methodology :**This was a hospital-based descriptive, cross-sectional survey carried out in selected hospitals in Sri Lanka. Sixteen Line Ministry Hospitals where Quality Management Units are already in place were selected for the study. Staff working in these hospitals including doctors, nurses and allied health staff was included. The data was collected using a self-administered questionnaire. The questionnaire was repeated after three weeks. **Findings:** A total of 378 participants responded in the study. This study identified top management commitment, training, teamwork, physical structure and monitoring system as independent variables that influence the CQI implementation programme. All the participants rated lower for teamwork and felt that teamwork had little influence on CQI programme implementation. The type of hospital has not influenced the implementation of CQI programme.

Index Terms: Continuous Quality Improvement, Top Management Commitment, Training, Teamwork, Physical Resources, Monitoring System.

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1 Introduction

Maintaining quality and safety in health care sector is of paramount importance as this will reduce the cost of care, prevent adverse healthcare outcomes, enhance overall quality of care provided to the patient and maintain public confidence in the health sector. Quality of Health Care is the degree to which health services for individuals and populations increased the likelihood of desired health outcomes and are consistent with current professional knowledge [2],[7]. The safety of healthcare is avoidance or reduction to acceptable limits of actual or potential harm from health care management or the environment in which healthcare is delivered. The Australian Commission for Safety and Quality in Health Care, defined safety as the degree to which potential risk and unintended results are avoided or minimized [4]. Improving quality in healthcare is an essential action and efforts to make improvements should be commended [10]. Improvement projects and research are necessary for healthcare quality and safety enhancement. However, improvement and its measurement are not easy. These improvement projects are difficult to implement and to sustain. There are known universal barriers to such projects. Lack of staff, staff workload, lack of communication, poor leadership, certain attitudes of some health workers such as laziness, complacency and absenteeism are some of the barriers proposed in the literature [17]. Enhancers to these projects are not adequately described in the literature. In a healthcare organization, the differences in anticipated barriers between the two levels of management, top and middle level, are of particular importance. Mohanty et al [13] identified a number of factors that can influence the implementation of TQM in healthcare systems. The factors can be classified as the following: Organizational factors, Interpersonal factors, environmental factors, facilities and economic factors. Malcolm Baldrige Health Care Criteria of USA describes the core values and concepts for quality improvement in health care organizations; visionary leadership, patient focus, organizational and personal learning, valuing staff, agility, focus on future, management for innovation, management by fact, public responsibility, focus on results and creating value and systems perspective. In a hospital 'quality fails when

systems fails' and all the units are inter-related and inter-dependent. Hence systems improvement is considered as a vital component in quality improvement [15]. Sri Lanka, a low middle income country in South Asia, is known for providing cost effective and free healthcare services to the patient. In Sri Lanka the government renders health care at primary, secondary and tertiary levels. The patient's entry to the system is at the primary level by a clinic or Community Health Center (CHC). Divisional hospitals function at a primary level. Patients are referred to secondary level if they need surgical or more advanced medical care. Teaching hospitals function as tertiary care units. Referrals to tertiary level are done from secondary level if specialist care is needed. However, quality and safety in hospitals in Sri Lanka are not optimal and need to be improved. Ensuring quality of care and safety of patients and providers of care has become a prime objective of the Health System in Sri Lanka. The Health Master Plan (2007) emphasized the need to make public hospitals more efficient and to ensure a more responsive service to the consumers. Taking this into consideration, the Ministry of Health established the Directorate of Healthcare Quality and Safety. The evolution of a National Quality Assurance Programme in the Sri Lankan Health Services dates back to 1989. Quality Secretariat of was established in Ministry of Health in July 2003. Later this was changed to Directorate of Healthcare Quality & Safety in September 2012. It was established with the aim to improve the quality and safety of health care in Sri Lanka. Directorate of Healthcare Quality and Safety (DHQS) has undertaken projects to improve healthcare quality and safety. In year 2000 a formal quality assurance programme was initiated at Castle Street Hospital for Women. Since year 2004, the programme was expanded to other healthcare institutions.In some healthcare institutions the quality assurance programme was not sustained or indeed failed. This was due to lack of formal knowledge of the factors that influence the quality of healthcare given by healthcare institutions in Sri Lanka. Therefore before quality improvement can be instituted on a wider scale, an in-depth study should be done to investigate enablers and barriers that influence the quality of care rendered. Hence the objective of this study is to examine the Factors Affecting Continuous Quality

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Improvement Programme in Government Hospitals of Sri Lanka.

2 Methodology

2.1 Study setting and sampling

This was a hospital based cross sectional descriptive study. The hospitals in Sri Lanka are either administered directly by the Line Ministry or Provincial Ministry. All the Tertiary Care Hospitals and selected secondary care hospitals functions comes Line Ministry (n = 42) and all other hospitals, usually Base Hospitals and Divisional Hospitals comes under Provincial Ministry. (n = 1002). In the year 2014, out of 42 hospitals, in 16 hospitals functional Quality Management Units (QMUs) were established. Therefore for this study, all these hospitals were selected. The study population was the administrative and clinical staff at these hospitals who had been employed at the hospital for at least 3 months. The included categories were:

- Medical Doctors (Medical Administrators, Consultant doctors and Medical Officers);
- Nursing Category Staff (Special Grade Nursing Officers, Nursing Sisters, Nursing Officers and Midwives); and
- Professionals supplementary to Medicine (PSM) category (Pharmacists, Medical Laboratory Technicians, Physiotherapists, Radiologists and Occupational Therapists).

There were no previous studies done in Sri Lanka to evaluate the factors affecting CQI programme in Sri Lanka. Hence using standard formula [16] to collect sample size was used and it was found to be 384. A non-response rate of 10% was assumed and further 38 were added to the minimum sample and the sample size was determined to be 422 in this study. Stratified sampling method was used to select the participants from the sampling population for this study both for hospitals and for the three staff categories.

2.2 Data Collection Instrument

A self-administered questionnaire was used to obtain data for this study. This instrument had been developed and used by Davies et al (2007) and Mary Dixon-Woods (2012) to measure quality improvement in the United Kingdom. Focus group discussions were held to adapt the questionnaire to the Sri Lankan context. The questionnaire consisted of three parts; the first part dealt with the perception of the Quality Management Unit in these hospitals. This part comprised 5 questions focusing on the knowledge of the QMU, usefulness of QMU and contribution to the QMU. The second part was on the attitude of the employee on certain selected aspects of Continuous Quality Improvement. This part consisted Continuous Quality Improvement (CQI) as the dependent variable and five independent variables (Top Management Commitment, Training, Teamwork, Physical Resources and Monitoring System) with 45 questions. The third part comprised six questions on socio-economic characteristics. Five point Likert scale of agreement ('strongly agree' to 'strongly disagree') or frequency (never to always) was used in this study. Pre-testing of the questionnaire was done at the District General Hospital, Moneragala, Sri Lanka, while data collection was done at the hospitals where QMUs were established. The self-administered questionnaire was submitted and filled by staff individually.Data collection was

done for one and half months from 15th of August 2014 to 30th of September 2014.To ascertain the test re-test reliability, the same instrument was administered again to the staff member after three weeks. Serial numbers were used to pair the responses to compare repeatability. The second of the responses were used when there was any discrepancy of the responses.

2.3 Analysis

Internal consistency reliability was estimated with the Cronbach $\propto$ coefficient. The $\propto$ coefficient ranges from 0 to 1: values greater than 0.70 are generally considered acceptable for a group comparison has been recommended [14]. Upon completion of data collection, statistical analyses were completed using the Statistical Package for the Social Sciences (SPSS 16.0) computer program to determine and measure frequencies and central tendencies. Operational Variables are illustrated in supplementary material. Informed verbal consent was taken from each participant before administering the questionnaire. They were given reassured that their identities would not be revealed and also that the data would not be processed in terms of individuals, but as groups. Ethical review was sought and obtained from the Faculty of Medicine, University of Colombo. Permission was taken from the Ministry of Health and relevant hospital authorities.

3 Results

Test-Retest Reliability revealed that the significance level for paired sample correlation and paired samples test is more than 0.05 for all the variables. In this study Cronbach's α coefficient is 0.86, and therefore, this questionnaire can be regarded as reliable. Total study sample was 378, out of which smallest portion was 43 (11.3 %) of PSM category staff, and largest portion was 237 (62.7%) of Nursing Category staff. The rest were Medical Doctors 87 (23.1%) and missing data 11(2.9%). Two hundred and fifteen sixty six (70.4%) of the sample were female. Majority of the study sample (80.7%) were 35 or less than 35 years of age. The distribution of respondents **according to the period of service in the hospital was divided in to two groups: Five years or less than five years of service (71.1%) and more** than five (28.9%). Even though a fully functioning Quality Management Unit (QMU) was established a year ago, the data shows that 54 (14.2%) of the study sample are not aware of the presence of Quality Management Unit in their hospital. Percentages of positive and negative perceptions of participants, on staff perception of QMU were calculated along with mean and standard deviation. Positive attitudes were defined as having mean of scale scores $\geq$ 3.5, the equivalent of somewhat agree or agree or strongly agree on the Likert scale used for the response options. The mean for QMU is essential is 4.405±0.67, having a QMU is useful is 4.374±0.71 and the mean for QMU is a wasteful exercise is 1.936±0.97. This demonstrates the importance given by the staff on quality related activities in hospitals. Anyhow it is interesting to note that 20 (5.3%) of study sample participated in the Quality Improvement programme. The mean and standard deviation of CQI programme implementation and factors affecting CQI implementation were given below.

Table 1: Mean and Standard Deviation of CQI Programme Implementation

Dimensions	Mean	S.D.	% Positive Response*
CQI Programme Implementation (Dependent)	3.24	0.46	43.6
Top Management Commitment	3.51	0.77	52.1
Training	3.15	0.73	41.1
Team Work	3.05	0.802	37.4
Physical Resources	3.23	0.67	42.2
Monitoring System	3.14	0.71	41.8

Positive attitudes were defined as having mean of scale scores ≥3.5, the equivalent of somewhat agree or agree or strongly agree on the Likert scale used for the response options.

Of the independent variables, top management commitment has the highest mean value followed by the physical resources in Government Hospitals. The high value of standard deviation from the above table infers that there are variations of responses. Also it can be noticed that only the top management commitment study sample has a majority positive attitude. Correlation between factors affecting CQI implementation and CQI implementation were calculated using Pearson correlation. All the correlations between independent and dependent variables were significant. CQI Implementation programme shows highest correlation with Monitoring System (0.524), and lowest with teamwork (0.225).

Table 2: Correlation between CQI Implementation and Factors Affecting CQI Implementation

Factors Affecting CQI Implementation (n=378)	Pearson Correlation	Sig.(2-tailed)
Top Management Commitment	0.387	0.000
Training	0.443	0.001
Teamwork	0.225	0.001
Physical Resources	0.462	0.000
Monitoring System	0.524	0.001

Table 3: summarizes the multiple regression model for CQI Programme Implementation in Government Hospitals

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
0.589	0.346	0.337	0.37333	1.856

4 Discussion

Overall in this study, top management commitment has the highest mean (3.51±0.77) when compared with the other independent variables. Its correlation with the CQI Programme implementation is 0.387 and it is statistically significant. This indicates that the top management should involve actively in the quality improvement programme. A study carried out USA shows that the greater the percentage of hospital staff, senior managers and physicians participating in QI teams, the better the scores on hospital quality indicators. The percentage of hospital staff participating in Quality Improvement teams showed statistically significant, positive associations with four of the six hospital-level quality indicators [18]. Hence more involvement of top management should a strategy to improve quality in government hospitals of Sri Lanka. In multiple regression for the CQI programme implementation, R^2 of 0.346 indicates that 34.6% of the variables can be explained by this model. It indicates some other important variables should be included in this model. However, R Square tends to somewhat over-estimate the success of the model when applied to the real world, so an Adjusted R Square value is calculated which takes into account the number of variables in the model and the number of observations (participants) our model is based on. This Adjusted R Square value gives the most useful measure of the success of our model [3].The Durbin-Watson statistic is always between 0 and 4. A value of 2 means that there is no autocorrelation in the sample. Values approaching 0 indicate positive autocorrelation and values toward 4 indicate negative autocorrelation. Hence there is a positive autocorrelation between the CQI Programme Implementation and the dependent variables. In any professional organization continuous training of staff at all levels is extremely important an activity and deserves full and should receive serious attention of the management. For the healthcare institutions, it is imperative that training goes hand in hand with the professional work so that there is always a ready pool of trained and competent personnel to usher in new and better techniques of professional excellence [8]. Overall in this study, training has a mean of 3.15±0.73. Its correlation with the CQI Programme Implementation is 0.443 and it is statistically significant. Even though continuous training on healthcare quality and safety plays a crucial role, the participants generally do not value the training programmes when compared with the monitoring system and physical resources. This may be due to the fact that even though Ministry of Health has a standard training programme, the hospitals are still depended on the Directorate Healthcare Quality and Safety for their training programmes. This is due to the lack of trainers for the training programme. CQI inherently increases the dignity of the employees involved because it is not only recognizes the important role belonging to each member of the process improvement team, but also involves them as partners and even leaders in the redesign of the process. In some cases, professionals can also serve as consultants to other teams and to management itself [11]. Overall in this study, teamwork has the lowest mean (3.05±0.802) when compared with the other independent variables. Its correlation with the CQI Programme Implementation is 0.227 and it is statistically significant. This correlation is lowest when compared with other independent variables in the study. This indicates that participants are less concerned about the teamwork. There are various roadblocks to team progress identified and they are:

- Insufficient training of the staff. This is mainly because the training programmes are centrally based;
- First – line supervisor resistance;

- Lack of management support for the quality improvement initiatives;
- Lack of union support for the quality improvement programme. Health sector has more than 100 trade unions
- Organization objectives are not being publicized. The management does not disseminate the goals, objectives and plan to the operational level staff. Hence they are unaware why they are working for and what they are doing;
- No time to do improvement work. Mostly government hospitals are disorganized and staff spend most of their time for non-value added activities. Hence they are unable to concentrate on their quality improvement activities;
- Incompatible rewards and compensation. Government hospitals do not have a rewards or compensation mechanism for the highly performing staff. Most of the time highly performed or less performed, both are treated equally;
- Lack of planning. Another important aspect for barriers of teamwork. There is no proper planning for quality improvement work. Some hospitals working for quality improvement merely to get awards. Once they get award the enthusiasm and team spirit disperses; and
- No clear measure of success. Sometimes the success was not communicated or shared with the team. The leaders get their credit for the success.

Overall in this study, the independent variable of physical resources has a mean of 3.23±0.67 in this study. Its correlation with the CQI Programme Implementation is 0.462 and it is statistically significant. This indicates that providing adequate physical resources such as drugs, kit staff and also cleanliness is essential in a quality improvement programme. The practice of TQM assesses the patient's perception of quality with regard to physical facilities in the health care institutions. Resource management is basically concerned with management of available resources which are needed right from patients' entry in the hospital to their discharge and therefore, is a critical factor for any health care institution. This practice includes: resource measurement, infrastructure, cleanliness, maintenance, and availability of service such as ambulance, laboratory, operation theaters, wards, materials, information system, ATM, banks, and drug stores. Good service cannot be provided if there is insufficient provision of the aforementioned items, no matter how professional doctors, physicians, and supporting staff are [1]. The provision of these facilities and materials has a direct impact on patient satisfaction [6]. Monitoring using performance indicators are used by managers to assist them to review systems and examine results both within their own organization and externally against the results of other organizations. They are often seen as a centralized tool where poor performance can be identified. Overall in this study, monitoring system has a mean value of 3.14±0.71 in this study. Its correlation with the CQI Programme Implementation is 0.524 and it is statistically significant. When compared with the other independent variables, monitoring system has the highest correlation with the CQI implementation programme. This itself indicates that the importance given to the monitoring system for the quality improvement programme by the study population. When the

CQI programme implementation was analyzed gender wise female participants had a mean (3.19±0.671) more than the male participants (2.99±0.78) on top management commitment. Anyhow male participants showed a higher correlation (0.612) than the female participants (0.445). Here too, among male and female participants of the study, when compared with the other independent variables, monitoring system has the highest correlation with the CQI implementation programme. This confirms importance given to the monitoring system for the quality improvement programme by the study population.

5 Limitations

Even though the study was carried out with systematically after reviewing literatures on Continuous Quality Improvement in health sector, there are few limitations identified. The identified limitations are given below:

1. The study was carried out only in sixteen Line Ministry Hospitals. Hence, the study cannot be generalized.
2. The study was carried out only among medical doctors, nursing category and PSM category staff. Other categories of staff were not included. Therefore, generalization of the findings of this study may not be possible.
3. The study was carried out immediately after a trade union action. Hence the aftermath of the trade union action would have reflected in the study.
4. District Hospitals, Peripheral Units and Rural Hospitals are not included in this study. Therefore, factors related to CQI programme implementation working in these hospitals are not identified.
5. The comparison of findings with those of other studies. Often, researchers use a variety of instruments to measure the variables they are investigating. This diversity presents a significant problem for researchers in that they may find it difficult to compare their findings with those of previous research findings.

6 Recommendations

Based on our findings we make the following recommendations: Measures must be taken to improve the teamwork among different categories of staff and between all the units. To develop the teamwork there should be mechanism for staff grievance handling, conduct tours for staff, staff get-together programmes, introduce mechanism for whistle blowing, Conduct team building activities for the staff under the concept of spiritual health. Also, it is necessary to arrange regular staff meetings that allow staff at all levels to discuss concerns and difficult issues, exchange information and ideas, and support each other to solve encountered problems. This can be carried out by establishing Work Improvement Teams (WIT) in all the units. Training programmes for the staff need to be strengthened. Therefore there should be orientation programme for the newly recruited staff and continuous professional development programme for the existing staff. Since training to be island wide programme, a master trainers' manual should be developed and master trainers from all the provinces should be developed so the training programme can be decentralized. Therefore the hospitals can conduct their own training programmes with the resource personnel. As all categories of staff believe that monitoring system is important in the implementation of CQI

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programme. Hence standardized monitoring system in CQI programme should be strengthened throughout the country. The term CQI programme implementation is a multidimensional phenomenon and subsequently lacks adequate definition. Therefore, further research should be encouraged to study the excluded variables the affect CQI programme implementation in government hospitals of Sri Lanka. The present study should be extended other varied hospitals in the country and to other health care staff categories.

7 Conclusion

The study found out that there are no significant factors affecting CQI programme implementation between selected 16 hospitals in government hospitals in Sri Lanka. The important factors contributing to the CQI implementation were monitoring system, physical resources and training. According to the study teamwork is less valued for the CQI implementation in the government hospitals.

Appendix A
- **Operational Definitions of Variables**

Variable	Definition
Continuous Quality Improvement	Continuous Quality Improvement (CQI) is a process aimed at constantly improving a service delivery in a hospital
Top Management Commitment	Direct participation by the highest level executives in a specific and critically important aspect or program of an organization. In quality management it includes: (1) setting up and serving on a quality committee, (2) formulating and establishing quality policies and objectives, (3) providing resources and training, overseeing implementation at all levels of the organization, and (4) evaluating and revising the policy in light of results achieved.
Training	The process of teaching to enhance skills and make proficient in healthcare quality and safety through in-service training programmes.
Teamwork	The process which stresses the joint involvement with the other categories of staff in the decision-making process to meet the goals of the organization
Physical Resources	The physical work environment in which the Officers carry out his / her duties, and the availability of necessary objects to work comfortably to improve quality and safety in healthcare
Monitoring System	Supervising quality related activities in progress to ensure they are on-course and on-schedule in meeting the objectives and performance targets.

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