



## Quality improvement culture in KPJ Seremban specialist hospital, Malaysia: The impact of total quality management system

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### ABSTRACT

Two studies were conducted. The first study was related to the quality Improvement culture survey where a pilot test was conducted in August 2012 with 100 staff responded. Reliability analysis test was conducted using SPSS and it was found reliable. The Cronbach's Alpha between Quality Improvement culture with implementing and complying to policies and procedures was 0.7. However, the Cronbach's Alpha based on standardized item, which employ the correlations among items, is 0.87. Two tailed t-test conducted, to find out the relationship between the dependent and independent variables was different from zero. Therefore the null hypothesis (H0) was rejected and we can conclude that the implementation of TQM in an organization has a positive impact on Quality Improvement culture(H1). The second retrospective study was conducted on the clinical indicators data for year 2008 before the hospital accreditation survey compared to year 2009 after the survey. Based on the data collected we can see clearly how the TQM process had improved the clinical compliances and business performances. Length of stay, unplanned admission to ICU within 24 hours of surgery, rate of white appendix and percentage of myocardial infarction patients receiving thrombolytic therapy were better in year 2009. Waiting time for admission and discharged had shorten and there was a reduction of complaints for year 2009. Clinical and non clinical indicators reduced and the number of staff attending continuing education increased in year 2009. Indeed, the quality improvement culture has truly given impact on the entire organization of KPJ Seremban Specialist Hospital.

### INTRODUCTION

Schein had suggested that 'the culture of an organisation is made up of many variables modes of interaction, assumptions, rituals, membership, structures, control mechanisms and so on'. Many large firms have adopted the Total Quality Management (TQM) practices in some form [1,2] Since year 2006, the hospital had implemented the Total Quality Management (TQM) system using ISO 9001:2000 followed by recertification in year 2009 for the new ISO 9001:2008. In the same year the Malaysia Society For Quality in Health (MSQH) Accreditation certification was achieved. The quality journey does not end there and the hospital had been certified for OHSAS 18801:2007 in year 2011. The hospital was later accredited by the Joint Commission International (JCI) Hospital Accreditation in year 2012. Various quality improvement and Patient Safety

programs were developed by the organization's leadership to support and promote the vision, mission, and core values of KPJ Seremban Specialist Hospital, Malaysia in order to ensure patients, visitors and employees safety. Programs were carried out by medical staff with the support of clinical and support services staff. The implementation of all the quality initiatives since year 2006 enable the hospital to achieve a continuous growth over the years. The objectives of the study were to monitor how the implementation of TQM system enable the hospital to improve the quality culture of healthcare organization, to analyze the relationship between TQM with quality culture in the hospital, to enable the management to monitor the performance of services provided, to monitor how TQM develop staff knowledge, skills and education and to improve patient safety and customer satisfaction

A working environment rooted in a culture of QIA, routinely uses data to examine process and product to enhance all aspects of operations[3,4]. Interest and experimentation thru QPS (Quality and Patient Safety) programs were monitored and accepted as well as expected characteristics of organizational and staff attitudes, values, goals, and practices.[5] In addition to promoting a culture of QIA and adoption of TQM within the hospital, KPJ Seremban Specialist Hospital Malaysia is now working to enhance its own working environment as a means to systematically meet the accreditation standards.

## METHODOLOGY

The objectives of this research were to study the effect of implementing TQM on quality culture in this organization. To achieve these objectives we have conducted two studies. The first study was related to the quality Improvement culture survey in this organization and the second study was a retrospective study on the clinical indicators from January to December 2008 before the hospital accreditation survey by MSQH compared to January to December 2009 after the survey.

### 1. First study (Quality Improvement Culture Survey)

The survey on quality improvement culture was conducted using the "Quality Culture Survey Questionnaires" which has been distributed to all level of staff i.e. Unit Managers, Head of services (Clinical and non-clinical support services), officers and staffs at KPJ Seremban Specialist Hospital in November 2012, which is after the accreditation survey by MSQH and JCI. Questionnaires consist of the following categories of variables:-

- Organization and management
- Human resources and development
- Complying on the policies and procedures
- Facilities and management system
- Quality improvement Culture

A pilot test was conducted in August 2012 at KPJ Seremban Specilaist Hospital and 100 staff had responded to this survey. Individual respondents will not be identified by name in any analysis or reports. Responders will be aggregated and reported as summary statistics only. This study attempts to view what factors or variables effecting or influencing the implementation of total quality management system on quality improvement culture by proposing the following questions:

a. When implementing the total quality management system such as accreditation, will it have impact on the quality improvement culture by including the following variables:

- Strategic planning in organization and management
- Human Resource Development
- Complying to policies and procedures
- Implementing Facilities management system

b. Does the staff continuously carry out the quality improvement activities to ensure quality and safe services provided?

c. What is the relationship between implementing total quality management system such as complying to the hospital accreditation with quality improvement culture?

d. Do the Accreditation standards bring benefit to the

organization?

To those questions, our study hypotheses are stated as follows:

H0 - Implementing total quality management system has no impact on the quality improvement culture in the organization.

H1- Implementing total quality management system has impact on the quality improvement culture in the organization.

2. Second study (A retrospective study on selected clinical indicators have been conducted from January to December 2008 before the accreditation survey by MSQH compared to January to December 2009 after the survey).

Data were analyzed to see the improvement achieved after the implementation of hospital accreditation.

The following quality indicators were collected:-

- i. Percentage of patients with length of hospital stay > 5 days after elective caesarean section
- ii. Unplanned admission to the intensive care unit within 24 hours of surgery
- iii. Rate of White appendix
- iv. Quality improvement Activities Improving waiting time
- v. Monitoring of clinical and non clinical incidents
  - Reduce harm resulted from falls
  - Monitoring of Needle stick injury
  - Wrong medication dispense

Besides the quality indicators, hospital financial performance was also been analyzed to see the impact of TQM in business growth.

## RESULTS

### The first study

Reliability analysis test conducted by using SPSS found that the Reliability Analysis was reliable. The Cronbach's Alpha between Quality Improvement culture with implementing and complying to policies and procedures was 0.7. However, the Crobach Alpha's based on standardized item, which employ the correlations among items, is 0.87[6]. The Cronbach's Alpha between Human Resources development variables with Quality Improvement culture was 0.6 and the Crobach's Alphas based on standardized item was 0.87. The result shows that the questionnaires used are reliable to the study conducted.

There were 251 respondents to this survey which is 53% of total staff. 35% of the respondents have > 5 years working experiences while 45% and 17% have, working experiences from 1 - 5 years and < 1 year respectively. 61% are executive levels and 37 are non-executives while 2% are the doctors. There were 21 questions in the questionnaires which been categorized in few independent and dependent variables such as

- i) strategic planning in organization and management,
- ii) human resource and development,
- iii) complying to policies and procedures,
- iv) facilities and management as the independent variables and

v) the quality improvement activities culture as the dependent variables.

All of these individual variables were averaged to have single variable for each independent and dependent category. The TQM elements were defined in the independent variables. Then the numerical relationships between those variables were converted to coefficient and correlations. Two tailed t-test conducted to find out the relationship between the dependent and independent variables was different from zero. The 95% of Confidence Interval between the dependent variable (Quality Improvement

Culture) with the independent variables such as i) Strategic planning in Organization and Management was (0.019,0.114), ii) Complying with Policies and procedures (0.279,0.583) and iii) Facilities and management system (0.14,0.366).

If the 95% confidence limit doesn't contain zero, then the null hypothesis (H0) of no relationship between dependent and independent variables can be rejected (Cooper 1998). Hence we reject the null hypothesis (H0) and can conclude that implementing TQM in an organization has a positive impact on Quality Improvement culture(H1).

**Table 1: Coefficients<sup>a</sup>**

Model	95.0% Confidence Interval for B	
	Lower Bound	Upper Bound
1 (Constant)	.664	1.681
Org & Mgt	.019	.114
Policies & Procedures	.279	.583
Facilities & Mgt	.147	.366
HR	.145	.284

a. Dependent Variable: Quality improvement culture

## The Second study

**Table 2:** The result of various indicators for year 2008 and 2009 compared to the standard

Indicators	Standard	Year 2008 (average)	Year 2009 (average)
Patient Safety			
1. LOS > 5 days after elective caesarean section	< 1%	0.47%	0%
2. Unplanned admission to ICU within 24 hours of surgery	0	8	5
3. Rate of white Appendix	5 – 20%	23%	12%

4. % of Myocardial Infarction patients receiving Thrombolytic	➤ 70%	75%	95%
Benchmarking	Standard	Year 2008 (average)	Year 2009 (average)
i. Waiting time admission	(min) 30	(min) 60	(min) 30
ii. Waiting time for discharge	54	40	30
iii. Complaints recoded	137 complaints	75 complaints	62 complaints
Clinical incidents	3.7%	0.3%	0.2%
Non clinical incidents	16%	0.4%	0.2%
Human capital development (Continuous education)		21	34
- Diploma			
- Post Basic training			
- Bachelor Degree and Master Degree			

Sources:

- KPJSeremban Specialist Hospital Clinical Indicators monthly report (2008 & 2009)
- Incidents Report 2008 & 2009
- Quality Improvement Activities monthly report 2008 & 2009

## DISCUSSION

The first study on the survey of quality improvement culture, address the strength of relationship between TQM and quality improvement culture. The survey included questions on the level of compliance and understanding in TQM process towards quality improvement. From the analysis of the result, we found that attributes like complying to policies and procedures has the higher correlations with quality improvement culture. Full compliance with policies and procedures ensured the

achievement of quality improvement culture. Monitoring on the compliances of the standards should be on going and continuously carry out. The next variables, which have high relationship with quality improvement culture, are the commitment of top management and leadership followed by maintaining good infrastructures and last but not least human resource development. Top management and leaders, must be committed to successfully implementing TQM and achieved quality improvement culture in an organization. Additional to

**Table 3:** KPJ Seremban Specialist Hospital financial performance for Year 2008 & 2009

	Variance (Yr 2009 Vs Yr 2008)
Outpatients	9.2%
Inpatients	8.1%
Number of Surgeries	7.3%
Revenue (RM)	12%
PBT (RM)	6%

Sources:

*KPJ Seremban Specialist Hospital Financial and Accounting report (2008 & 2009)*

that, through empowerment, training and teamwork TQM should be mainly part of the organizational culture.

The second study was a retrospective study on the clinical outcome data before and after implementing hospital accreditation standards from January to December 2008 (before the accreditation survey by MSQH) compared to January to December 2009 (after the survey). Length of stay, unplanned admission to ICU within 24 hours of surgery and rate of white appendix were better in year 2009. Percentage of myocardial infarction patients receiving thrombolytic therapy were also better in year 2009. Waiting time for admission and discharged had shorten and there was a reduction of complaints for year 2009. Clinical and non clinical indicators reduced and the number of staff attending continuing education increased in year 2009. The results of various clinical indicators for year 2008 and 2009 concluded that the Patient Safety Indicators are a set of indicators providing information on the hospital performances with better clinical compliances [7,8,9]. Shewawy, Baker and Lemak (2007)[3] examine the relationship between TQM or quality measurement practices and key performance measures and found that TQM would lead to be better competitive advantage. Jitpaiboon and Rao (2007)[6] used meta analysis to examine the relationship between TQM practices and performance and they are positively related to organizational performance. The hospital financial performance seen in table 3 was better in year 2009 compared to year 2008. The number of outpatient and inpatient increased by 9% and 8% respectively. The revenue increased by 12% in year 2009 compared the previous year. These improvement reflects the impact of implementing TQM in this organization.

## CONCLUSION

The results from the study concluded that implementing TQM in an organization has a positive impact on Quality Improvement culture. By using the results, the attributes like strategic planning in organization and management, human resource and development, complying with policies and procedures and effective facilities & management system have positive impact with quality improvement culture. The results of various clinical indicators for year 2008 and 2009 concluded that the Patient Safety Indicators are a set of indicators providing information on the hospital performances with better clinical compliances. The comparison analysis of hospital selected clinical indicators before and after accreditation has shown that TQM has positive impact on the hospital's clinical outcome. Based on the data

collected we can see clearly how the TQM process had improved the clinical compliances.

The hospital financial performance was also been analyzed to see the impact of TQM in business growth. The improvement of business performances for the hospital indicated the success of TQM. Therefore, relationship between TQM practices and performances are positively related.

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