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THE IMPACT OF APPLYING TOTAL QUALITY MANAGEMENT PRINCIPLES ON THE OVERALL HOSPITAL EFFECTIVENESS: AN EMPIRICAL STUDY ON THE HCAC ACCREDITED GOVERNMENTAL HOSPITALS IN JORDAN

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Abstract

The present study was conducted to bring the attention to the importance of applying total quality management (TQM) and their effects on organizational effectiveness, and particularly the hospital effectiveness. The main objective of the present study was to investigate the impact of applying TQM on the overall hospital effectiveness in the accredited governmental hospitals in Jordan that accredited from Health Care Accreditation Council (HCAC). The study population represented all health care professionals working in the five HCAC accredited governmental hospitals who were working for more than three years in the same hospitals. Study sample included 1290 employees. The response rate was 83.6 % of the total questionnaires distributed. TQM principles were: Leadership commitment to quality, Customer focus, Continuous improvement, Teamwork, Employee involvement, education and training. Study findings showed a significant impact of all TQM principles on the overall hospital effectiveness ($p < 0.05$). Using multiple linear regression analysis showed that TQM is a strong predictor of hospital performance (Beta =0.818, t=46.613, R2= 0.669, and p value = 0.000). Taken together, applying the principles of TQM increases the overall hospital effectiveness in the HCAC accredited governmental hospitals in Jordan.

Keywords: Total quality management, organizational effectiveness, hospital effectiveness, Accreditation, Health Care Accreditation Council, Jordan.

Introduction

Total Quality Management (TQM) is a management approach of an organization centered on quality based on the participation of all of its members aiming at long term success through customer satisfaction and benefits to all members of the organization and to the society (ISO 8402, 2009). Accordingly, TQM is an approach to continuously improving the quality of all the organizations, processes, products and services (Kotler, 2000).

TQM is based on a set of principles that seek to increase stakeholders' satisfaction through best use of organizational resources. But the impact of each of quality management principles on organizational effectiveness is still debated. Several studies have investigated the impact of applying TQM principles on overall organizational effectiveness and performance. Many studies has found a strong and positive relationship with performance, There is a general agreement that a successful TQM implementation is leading to improve organization effectiveness (Hendricks and Singhal, 2001; Hansson and Eriksson, 2002; Brah et al., 2002; and Kaynak, 2003).

The success implementation of TQM in industry has encouraged healthcare leaders to study whether it can be implemented in the healthcare sector. Studies indicate that the TQM activites leads to improve patient satisfaction, increased productivity, increase profitability, and improved health care organization performance. (Alexander et al., 2006; Macinati., 2008).

Principles of Total quality Management (TQM)

Several studies have addressed implementation failures to include the selection of wrong TQM principles (Ahire, 1996), the lack of understanding about the role of leadership competencies for implementing TQM principles (Perles, 2002), and the lack of information about linkages between TQM principles (Srdoc, Sluga, and Bratko, 2005).

Several studies suggested the existence of various principles of TQM that are considered critical prerequisites to successful TQM implementation:

1. Leadership/top management commitment, as identified by (Rahman, 2001; Brah et al., 2002; Prajogo and Sohal, 2003; Karuppusami and Gandhinathan, 2006; Tari et al., 2006; Sila, 2007; Ou et al, 2007; Al-Khalifa et al., 2008; Salaheldin, 2009; Arumugam and Mojtahedzadeh, 2011; Zehir et al., 2012).
2. Customer focus, as identified by ((Karuppusami and Gandhinathan, 2006; Tari et al., 2006; Ou et al, 2007; Sila, 2007; Al-Khalifa et al.,2008; Arumugam and Mojtahedzadeh, 2011; Zehir et al., 2012).

3. Teamwork, as identified by (Brah and Lim, 2006; Karuppusami and Gandhinathan, 2006; Tari et al., 2006; Ou et al., 2007; Sila, 2007; Al-Khalifa et al., 2008; Arumugam and Mojtahedzadeh, 2011).
4. Continuous improvement, as identified by (Talavera, 2004; Zehir et al., 2012).
5. Employee involvement, identified by ((Talavera, 2004), (Zehir et al., 2012)).
6. Education and training, as identified by (Demirbag, 2006; Karuppusami and Gandhinathan, 2006; Fryer et al., 2007; Al-Khalifa et al., 2008; Salaheldin, 2009; Arumugam and Mojtahedzadeh, 2011; Malik and Khan, 2011).

According to the point of view of some researchers, organizations need a quality system and quality culture in the organization, and they provide the core assumptions of TQM as a philosophy of management which organizes, plans and continuously improves activities in which management and employees have to participate to improve processes and outputs. Thus, TQM is presented differently in different points of view, as there is no general and formal definition of TQM which can fit or be implemented in all organizations within all sectors. TQM definitions are different in each region and each country, based on national and organizational culture and perception of quality, and the requirement of that culture. In general, however, it is preserved as a management philosophy and the majority of authors relate the main role of TQM implementation to the management level of commitment towards quality improvement (Wikipedia, 2015).

Impact of TQM on Organizational Effectiveness

The impact of each of quality management principles on organizational effectiveness and performance is still debated. Several studies have investigated the impact of applying TQM principles on overall organizational effectiveness and performance. Large number of these studies have indicated a strong and positive relations with Quality performance (Terziovski and Samson 2000; Hendricks and Singhal 2001; Brah et al., 2002; Kaynak 2003; Prajogo and Sohal, 2003; Rahman and Bullock, 2005; Nair, 2006); Lakhal, Pasin, and Limam 2006; Sila 2007; Kumar et al., 2009; Lam et al. 2011; Zehir et al., 2012; Gimenez et al., 2013).

Kaynak (2003) stressed that TQM practices are related to the indicators of quality performance. Likewise, Kumar et al. (2009) concluded that quality improvement in process, product and service quality resulting from TQM activities, also Abdullah et al (2008) emphasized that organizational performance increases when organizations implement more TQM practices.

In addition, there are empirical studies that measure organization performance by TQM criteria (Wilson and Collier, 2000; Fynes and Voss, 2001; Montes et al., 2003; Sila and Ebrahimpour, 2005). These studies investigate a variety of theoretical and empirical issues. If TQM activities are implemented in proper way, it produces impact on organizational performance including improved customer satisfaction, enhanced internal communication, better problem solving and fewer errors.

In a study by Hendricks and Singhal (2001), the researchers empirically investigate a causal link between applying TQM and organization performance by demonstrating the significant performance difference between the organizations that implemented TQM and the organizations in the control group, the result showed a significant relationship between applying quality management practices and organizational performance.

TQM and Hospital Effectiveness

JCAHO (Joint Commission on Accreditation of Health care Organizations) put emphasis on performance assessment and investigative methodologies directed to improve patient health care outcomes and lead to improve the effectiveness. Performance improvement in health care was defined by JCI as: "Performance Improvement is continuous change to improve process through measuring services, identifying areas for improvement and developing improvements through multidisciplinary teamwork. The goal of performance improvement is to support a collaborative approach to patient centered care that focuses on improving safety, performance, patient outcomes and identifying and promoting best practices." JCI (2013).

Hospitals have tried several approaches or modules for quality improvement to document their effectiveness. In these days, hospitals work to fulfill several goals which are directed towards serving customers effectively and efficiently as stated by Minvielle et al. (2008). Hospital performance obviously shows the output of the health care services which are reflected obviously and effectively on the patients. Performance measurement is an important instrument for evaluating overall quality of health care service which should be carrying out in every unit and department of the hospital as it reflects the overall quality (Duggirala et al., 2008).

A variety of international organizations, which evaluate National Health Care Systems, in addition offering certification and accreditation processes, measure the performance of health structures in different countries, taking into consideration three main quality dimensions:

effectiveness, efficiency and customer satisfaction (Kaplan, and Roberts, 2001).

Deborah (2010) stressed that Health Care managers impact hospital performance to create stability within the organizational structure, to develop, implement, and sustain an environment of growth and competitive advantage. Moreover Shipton et al (2008), stated that "Organizational leaders shape effective quality performance outcomes by determining a vision and developing a commitment by health care individuals and teams which influences positive performance on quality activities set by the health care organization".

There is a common agreement that a successful TQM implementation is leading to improve organization performance success (Hendricks and Singhal, 2001; Hansson and Eriksson, 2002; Brah et al., 2002; and Kaynak, 2003). The success implementation of TQM in manufacturing has encouraged health care leaders to study whether it can be implemented in the healthcare sector. The TQM activities lead to high quality health care services, for example it leads to improve patient satisfaction, and increased productivity and profitability, improved health care organization performance. (Alexander et al., 2006; Macinati., 2008).

Methods and subjects

Design of the study

A cross sectional, quantitative design was employed.

Study Population and Sample

The study population represented all health care professionals working in the five HCAC accredited governmental hospitals who were working for more than three years in the same hospital. Study sample included 1290 employees. Returned questionnaires were 1079, and the response rate was 83.6%. Study sample included various health professionals such as:

hospital managers, assistant hospital managers, heads of departments and units, supervisors, physicians, dentists, pharmacists, pharmacist assistant, staff nurses, midwifes, associated nurses, nurse assistants, nutritionists, lab technicians, radiology technicians, anesthetic technicians, and sterilization technicians.

Study Instrument

A structured questionnaire was used, consisting from three parts; demographic data, total quality management, and hospital effectiveness which was accompanied with a cover letter that contained a brief summary of the study purpose and confidential considerations. The demographic data

included (age, sex, profession, and experience), The second part consisted of 35 items within 6 constructs for total quality management principles, and the third part consists from 20 items within one construct for overall hospital effectiveness. Several similar studies were reviewed to construct the questionnaire (Lai, 2003; Talavera, 2005; Demirbag et al., 2006; Sadikoglu and Zehir, 2010; Khairul et al., 2012; Ul Hassan et al., 2012).

Validity and Reliability of the study instrument:

Tool validity was tested through taking into account questions totalitarian and avoiding duplication, in addition the questionnaire had been reviewed by academic and technical specialists to ensure its effectiveness.

The researcher conducted two pilot studies to identify the degree of clarity and understanding of the questionnaire paragraphs from the respondent viewpoint, also to determine possible problems with the design and instrument used in this study. A convenience sample of 30 health care workers was obtained using the identical selected criteria as planned for the main study. All requirements for informed consent were met in the oral and written explanation to the participants. The collection of data followed the format identified in the main study and was found to be effective. The first pilot study conducted, Cronbach's Alpha was calculated, in addition the participants were asked about their opinions about understanding of questionnaire statements, and to provide a feedback, comments and suggestions. After receiving the feedback from the participant; the researcher found that there was a need to do minor revisions in wording of several questions and refinements in overall format so as to increase readability and ease of answering. After one month the researcher asked the same participant to fill the modified questionnaire, Cronbach's Alpha was calculated (table 1). Participants reported that the wording of the instruments and the instructions were clear, and then the questionnaire appears in its final form.

Table 1: the reliability of the study main dimensions

Factor	***Number of items***	***Cronbach's α for first version***	***Cronbach's α for second version***
TQM Principles:			
Organizational commitment to quality	12	0.86	0.88
Customer focus organization	5	0.84	0.86
Employee Involvement	4	0.77	0.82
Teamwork	5	0.86	0.88
Continuous Improvement	4	0.61	0.71
Education and training	5	0.88	0.89
Hospital Effectiveness			
Overall Hospital effectiveness	20	0.92	0.92
Total Cronbach's Alpha		0.82	0.85

As shown in table 1, the reliability test value revealed that; all values of Cronbach's alpha coefficient were greater than 0.6 which is the minimum accepted value especially in social sciences.

Data Analysis

Data was represented as frequency and percentages for general characteristics of study participants. The impact of TQM on hospital effectiveness was tested using multiple regression analysis.

Study Findings

Distribution of study participants by study hospitals

The study participants included 1079 participants who were recruited from five hospitals: Prince Hamza Hospital (24%), Prince Hussein Hospital (21.3%), Princess Rahma Hospital (20.2%), Princess Badea' Hospital (19.9%), and Al- Shuneh South Hospital (14.6%) (table 2).

Table 2: Distribution of study participants by study hospitals

Hospital	Frequency	Percentage
Prince Hamza Hospital	259	24.0 %
Prince Hussein Hospital	230	21.3 %
Princess Rahma Hospital	218	20.2 %
Princess Badea' Hospital	215	19.9 %
Al- Shuneh South Hospital	157	14.6 %
Total	1079	100 %

General characteristics of participants

About 39% of participants were males, whereas about 61% were females. Within the age interval 20-35 years, there were 47.5% of participants, this percentage slightly decreased in the age interval 36-50 years (44.9%), but dramatic decrease in percentage of participants occurred in the age interval 51-65 years (7.9%). Education level of participants ranged from diploma (36.4%), bachelor (53.8%), and the lowest percentage (9.8%) was among participants with higher education. Experience years of participants ranged from 3-5 years (22.5%), 6-10 years (29.6%), 11-15 years (21.8%), 16-20 years (13.5%), 21-25 years (7.2%), and more than 25 years (5.4%). According to profession of participants, there were 0.5% hospital directors, 0.4% hospital director assistants, 9.6% heads of unit, 2.6% supervisors, 10.8% physicians, 0.8% dentists, 4.4% pharmacists, 2.1% pharmacist assistants, 31.6% staff nurses, 8.3% midwifes, 11.2% associate nurse, 4.6% nurse assistants, 5.8% laboratory technicians, 3.6% radiology technicians, 2.1% anesthetic technicians, 0.7% sterilization technicians, and 0.6% nutritionist (table 3).

Table 3: General characteristics of participants

Variable	Frequency	Percentage
Gender		
Male	422	39.1
Female	657	60.9
Age (years)		
20-35	513	47.5
36-50	484	44.9
51-65	82	7.9
Education		
Diploma	393	36.4
Bachelor	580	53.8
Higher education	106	9.8
Experience (years)		
3-5	243	22.5
6-10	319	29.6
11-15	235	21.18
16-20	146	13.5
21-25	78	7.2
> 25	58	5.4
Profession		
Hospital manager (Director)	5	0.5
Hospital manager assistants	4	0.4
Head of unit	104	9.6
Supervisor	28	2.6
Physician	117	10.8
Dentist	9	0.8
Pharmacist	47	4.4
Pharmacist assistant	23	2.1
Staff nurse	341	31.6
Midwife	90	8.3
Associated nurse	121	11.2
Nurse assistant	50	4.6
Lab technician	63	5.8
Radiology technician	39	3.6
Anesthetic technician	23	2.1
Sterilization technician	8	0.7
Nutritionist	7	0.6

Results of Testing Hypothesis

The main hypothesis is:

H1: There is statistically significant impact of the applying TQM principles on the overall hospital effectiveness, as perceived by healthcare professionals at the accredited governmental hospitals in Jordan.

To test the primary hypothesis, we used multiple regression analysis. As shown in table (4), there was a positive correlation between TQM principles and overall hospital effectiveness (B =0.881, t= 46.61, R= 0.818,

R^2 =0.669, F=2172.78, p=0.000). Furthermore, the regression equation predicted almost 66.9% contribution of total quality management to Hospital effectiveness in the accredited governmental hospitals in Jordan.

Table 4: The impact of applying TQM principles on overall hospital effectiveness

	Dependant Variable (Overall Hospital Effectiveness)									
Independent Variables (TQM Principles)	R**	R2	B	Beta	F	Sig(F)	t-value	Sig(t) p-value	VIF	Decision
	.818	.669	0.881	.818	2172.784	0.000	46.613	.000	1.000	Accepted

** Correlation is significant at the 0.05 level (2-tailed).

Discussion

This study purposed to find out the impact of applying Total Quality Management (TQM) on over all hospital effectiveness in the accredited governmental hospitals in Jordan. Several studies have argued that TQM principles should be applied in every organization (Li et al., 2006). It has been emphasized that all departments have to collaborate together to accomplish the required level of the performance throughout TQM implementation, and it is not just top management responsibility, or quality unit, it is an integration of leadership commitment, employees involvement, team work, continuous improvement to provide high quality outcomes which include customer satisfaction (Li et al., 2006). According to a study of Salameh, Alzyadat, and Alnsour (2011), the adoption of TQM as a modern approach still limited in the Arab countries. Teamwork, continuous improvement, integrated coordination, creativity and innovation are the bases of TQM philosophy. The competent administrative leadership is the backbone for implementing (TQM) methodology.

The findings of the present study revealed a significant positive relationship between TQM principles and hospital effectiveness. This finding confirmed and supported the findings of other studies including (Brah et al., 2000; Terziovski and Samson, 2000; Hendricks and Singhal, 2001; Brah et al., 2002; Kaynak, 2003; Prajogo and Sohal, 2003; Rahman and Bullock, 2005; Demirbag et al., 2006; Lakhal, Pasin, and Limam 2006; Nair, 2006; Sila, 2007; Abdullah et al., 2008; Kumar et al., 2009; Sadikoglu, 2010; Lam et al., 2011; Khairul et al., 2012; Ul Hassan et al., 2012; Zehir et al., 2012; Gimenez-Espin, Jiménez-Jiménez, and Martinez Costa 2013). All of these studies found that TQM has a significant positive relationship with organizational performance and effectiveness in direct or in indirect way.

The findings of the study also revealed that total quality management principles had a significant positive impact on hospital effectiveness in the HCAC accredited governmental hospital in Jordan which led to an increase

in the hospital performance. This finding supported the findings of other studies such as (Yusuf et al., 2007; Eker and Pala, 2008; Zakuan et al., 2009; Irefin, Abdul-Azeez, Hammed, 2011; Khairul et al., 2012; Ul Hassan et al., 2012), in which their findings showed that TQM had a positive impact on the organizational effectiveness and performance. The findings emphasized that the importance of adapting TQM philosophy as a managerial approach and using accreditation as a tool for quality improvement in the health care sector.

Conclusion

Implementation of TQM principles on health organizations has positive impacts in the overall hospital effectiveness.

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