

## FACTORS AFFECTING TOTAL QUALITY MANAGEMENT IN INDIAN HEALTHCARE INDUSTRY

**Dr. Anil Khurana<sup>1</sup>**

<sup>1</sup>Associate Professor at Department of Management Studies,  
Deenbandhu Chhotu Ram University of Science & Technology,  
Murthal, Sonapat, Haryana

**Satbir Singh<sup>2</sup>**

Research Scholar,  
Department of Management Studies,  
Deenbandhu Chhotu Ram University of Science & Technology,  
Murthal, Sonapat, Haryana

### ABSTRACT

*Total Quality Management has become a philosophy of management for continuously improving the quality of products and processes. Considering the features of this concept, TQM has been implemented in healthcare industry in India as well. After the emergence of private and corporate hospitals, there is pressure on government hospitals as well to perform and to provide quality services to the patient. Therefore, hospitals explore the factors that influence the quality of healthcare so that they can consider those factors while implementing TQM as their management philosophy. This article attempts to explore the factors that influence the quality of healthcare industry in India. This article also attempts to compare these factors influencing quality with respect to government, private and corporate hospitals.*

**Keyword:** Total Quality Management, TQM, Healthcare

### INTRODUCTION

For more than last twenty years, Total Quality Management has become a philosophy of management for continuously improving the quality of products and processes. Earlier TQM was being used in manufacturing sector only. But it is being used in other sectors as well. With the increasing benefits of TQM, healthcare industry has also started using TQM practices in their working. Since the mid-1990s, number of corporate and private hospitals started their operations in the country. This led to competition among government managed and private hospitals. Since then, the Government of India has been trying to persuade the various state governments to introduce appropriate regulatory mechanisms for the healthcare sector. Hospitals have identified several factors that influence the quality of healthcare services. These factors include Cleanliness, ambience, admission and discharge procedure, cooperation, service offered by healthcare staff, competency of doctors and other staff etc. Management and utilization of Resources, facilities and accreditation from certifying agencies like National Accreditation Board for Hospitals & Healthcare are important key factors that influence the quality of Indian healthcare industry.

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## REVIEW OF LITERATURE

Due to increasing competition, awareness and globalization of Indian economy, the flood gates were also open to the private and corporate hospitals to open their branches in the entire country with an objective to serve the patients with modern latest techniques at affordable prices. This led to development of pressure to implement TQM by the hospitals in their working to achieve its objectives of serving patients in better way and creating their brand name and profitability (Motwani, Sower, & Brashier, 1996).

Number of factors were considered by several researchers that affect the quality of healthcare industry ranging from 8 to 12 factors (Fotopoulos et al., 2009; Porter and Parker, 1993; Ahire et al., 1996; Badri et al., 1995).

As it is evident that different hospitals provide similar nature of services but still the level of service quality is different among them (Youseff et al., 1996). In India, both public and private sector's hospitals are responsible to provide healthcare services to the nation and these sectors are different with respect to their operation, efficiency, structure, work culture, and background (Shrivastava and Purang, 2011). Despite of differences in working of different hospitals, the motto of every hospital is to provide quality healthcare services to customers which is a desirable target of any hospital to grow and be the part in the economic growth of the country (Andaleeb, 2000; Karydis et al., 2001).

In healthcare sector, different researchers have explored different factors that influence the quality of healthcare. Aagja and Garg (2010) found five major factors such as medical services, admission, overall services, social responsibility and discharge services and named them as PubHosQual. Arasli et al., (2008) explore six major factors that affect the healthcare quality which are priority to the inpatient needs, empathy, professionalism, personal relationship between staff & patients, physical environment, and food. Duggirala et al., (2008) also suggested seven factors namely hospitals' infrastructure, quality of personnel, administrative procedure, safety, clinical care process, social responsibility, and total medical care experience that affect the quality of healthcare industry.

## RESEARCH METHODOLOGY

**Objective of the Study:** The prime objective of the study to explore the factors influencing the quality of healthcare industry in India.

**Hypothesis:** Ha: There is a significant difference in the factors influencing the quality of healthcare in different types of hospitals in India.

**Research Design:** The present study is exploratory cum descriptive study.

**Sample Design:** In total, there were be 400 respondents chosen from government, corporate and private hospitals. Sample included Hospital Administrators, Doctors, Paramedical staff and Pharmacists. Only those hospitals were considered for the study who were having minimum 50 bedded indoor patient department facilities.

**Time of study:** The duration of this study was conducted from June 2013 to Jan 2015.

**Research Tool:** Well-structured questionnaire having 14 statements related to factors affecting TQM in Indian healthcare industry was used for the study (see annexure-1). Respondents were asked about the factors affecting TQM in their health organization. Respondents were asked to answer on Likert 5 point scale ranging from strongly disagree to strongly agree. MS-Excel and SPSS 20.0 software were used to process and analyse the data.

## ANALYSIS & INTERPRETATION

Primary data was collected from 400 respondents based on four demographic variables (see annexure -2). The data gathered was analysed with the help of statistical tools like mean, standard deviation, Factor analysis to explore the TQM practices of healthcare industry in India. Wherever the significant difference were found, the mean scores were compared to see the responses of the various categories. Further Post hoc test analyses were performed.

Through descriptive statistics, the range of mean values was found 3.05 to 3.61. The Cronbach's alpha value was found as 0.838 on all 14 statements. Correlation matrix of 14 statements which were developed to explore the factors affecting TQM in different types of hospitals in India. It was found there were good correlations between the statements; therefore, it may be stated that factor analysis is appropriate. Bartlett's test of sphericity indicated the value of KMO statistic (0.907) which is large than (>0.5). Thus, factor analysis is an appropriate technique for analysing correlation matrix. When the primary concern is to determine the minimum number of factors that will account for maximum variance in the data, PCA is recommended. (Malhotra, 2008).

**Table-1: Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.741	33.862	33.862	4.741	33.862	33.862
2	1.159	8.280	42.142	1.159	8.280	42.142
3	1.038	7.414	49.555	1.038	7.414	49.555

Source: Extraction Method: Principal Component Analysis.

In the table 1, it can be seen that first three factors account for 49.555 per cent of the variance from the cumulative percentage of variance, contributed by first component is 33.862 followed by second (8.280 per cent) and third (7.414 per cent) of total variance.

**Table-2: Rotated Component Matrix**

Statements	Component		
	1	2	3
1	.717		
2			.799
3		.714	
4		.520	
5	.558		
6			.546
7		.553	
8		.618	
9	.544		
10	.593		
11	.638		
12	.577		
13	.501		
14	.724		

Source: Extraction Method: Principal Component Analysis.  
Rotation Method: Varimax with Kaiser Normalization.

Table 2 namely rotated component matrix is useful for interpreting the factors. The rotation is made by the most commonly used method i.e. varimax procedure. Orthogonal method of rotation that minimizes the number of variables with the high loadings on a factor was used.

Table 1 clearly depicts that Factor-1 is explaining 33.862 of total variance and Factor-1 is linear combination of 08 statements which are statement no 1, 5, 9, 10, 11, 12, 13 and 14. Factor- 2 is explaining 8.280 of total variance comprises variable numbers 3, 4, 7 and 8. Factor-3 is explaining 7.414 of total variance which includes statement number 2 and 6.

**Naming of factors:** All the factors have been given appropriate names according to the variables that have been loaded on each factor. The name of these factors and the variable included in these factors along-with their loadings are shown in table no 3.

**Table-3: Principal component results (Factors affecting TQM in Indian Healthcare Industry)**

Factors	Description	Loadings	Eigen values	% of Variance
<b>F1</b>	<b>Service Provider Related Factors</b>		4.741	33.862
	Clean, comfortable and visually attractive environment	.717		
	Hassle free admission and discharge procedures	.558		
	Bill and claim settlements	.544		
	Competency of doctors, nursing and paramedical staff	.593		
	Healthcare team explains the disease treatment process	.638		
	Meals are tasty and adapted to patient's nutritious needs	.577		
	Services are carried out at appropriate time	.501		
	Hospital equipments are upto date and well maintained	.724		
<b>F2</b>	<b>Patient Related Factors</b>		1.159	8.280
	Caste, gender, education, and income level of patient	.714		
	Cooperation by patient / patient's relatives	.520		
	Type and level of patient illness	.553		
	Involvement of patient & family in medical decision making process	.618		
<b>F3</b>	<b>Environment Related Factors</b>		1.038	7.414
	Enforcement of quality standards like NABH	.799		
	Resources and facilities	.546		
<b>Total Variance Explained</b>				<b>49.555</b>

#### Comparative Analysis: Factors influencing TQM in Indian Healthcare Industry

The various statements were subjected to One way ANOVA. When there are more than two categories to compare, we can apply One way ANOVA (Malhotra 2009). One of the assumptions for one way ANOVA is that there must be equality of variance among the various categories under consideration. Levene's test is a measure for the homogeneity of variance among the various categories. Sig values less than 0.05 indicates that the variance among the various categories is not the same. In this case an adjustment to F-test is used which was given by Welch and Brown-forsythe. So in the following tables when Sig value of Levene's test is less than 0.05, Welch and Brown's Sig values are considered else the usual ANOVA Sig values are taken. Wherever the significant difference were found, the mean scores were compared to see the responses of the various categories. Further Post hoc analyses were performed.

**Table-4: Test of Homogeneity of Variance for different types of hospitals**

Factors	Levene Statistic	df1	df2	Sig.
Service Provider Related Factors	5.539	2	397	.004
Patient Related Factors	1.882	2	397	.154
Environment Related Factors	6.575	2	397	.002

Source: Primary (Data processed through SPSS 20.0)

**Table 5: Analysis of Variance (Group: Different types of hospitals)**

Factors		Sum of Squares	df	Mean Square	F	Sig.
Service Provider Related Factors	Between Groups	1.671	2	.835	.835	.435
	Within Groups	397.329	397	1.001		
	Total	399.000	399			
Patient Related Factors	Between Groups	5.130	2	2.565	2.585	.077
	Within Groups	393.870	397	.992		
	Total	399.000	399			
Environment Related Factors	Between Groups	34.021	2	17.010	18.503	.000
	Within Groups	364.979	397	.919		
	Total	399.000	399			

**Table 6: Robust Tests of Equality of Means**

Factors		Statistic*	df1	df2	Sig.
Service Provider Related Factors	Welch	.663	2	191.943	.517
	Brown-Forsythe	.761	2	243.846	.468
Patient Related Factors	Welch	2.719	2	200.652	.068
	Brown-Forsythe	2.550	2	304.549	.080
Environment Related Factors	Welch	16.235	2	206.814	.000
	Brown-Forsythe	19.017	2	327.127	.000

\*. Asymptotically F distributed

From the table 4 of Test of Homogeneity of Variance for different types of hospitals, it is clear that in case of Patient Related Factors, since the value of Levene statistics significance was found .154 which is greater than 0.5, therefore, only ANOVA was conducted and its value was also found to be 0.0787 (table 5.2.2) which is greater than 0.05, proving that alternate hypothesis is rejected for this variables.

While in case of in factor Service Provider Related Factors and Environment related Factors, the value of significance of Levene Statistics is less than .05, therefore, in these cases, Welch and Brown-forsythe test was conducted. These test results are shown in table 6 which depicts that for first variable i.e. Service Provider Related Factors, the value of significance is greater than 0.05, therefore, alternate hypothesis is rejected for this variables as well but for third variable i.e. Environment Related Factors, the value of significance is .000 which is less than 0.05, proving that alternate hypothesis is accepted for this variables. Thus, the results of the hypothesis is shown in the table 7

**Table 7: Hypothesis Results - I**

Factor	Hypothesis Result
Patient Related Factors	Rejected
Service Provider Related Factors	Rejected

In order to know how, the different types of hospital differs on factors third factor variable i.e. Environment Related Factors, the Post hoc Analysis was done with the help of Tukey's honest significance test. The result of Tukey's honest significance test are shown in table 8.

**Table 8: Post hoc Analysis – Multiple comparison (Tukey's honest significance test)**

Dependent Variable	(I) Type of Hospital	(J) Type of Hospital	Mean Difference (I-J)	Std. Error	Sig.
Environment Related Factors	Government Hospital	Corporate Hospital	-0.695*	0.135	0.000
		Private Hospital	-0.562*	0.108	0.000
	Corporate Hospital	Government Hospital	0.695*	0.135	0.000
		Private Hospital	0.133	0.130	0.563
	Private Hospital	Government Hospital	0.562*	0.108	0.000
		Corporate Hospital	-0.133	0.130	0.563

The result of Tukey's honest significance test according to their significance value have been interpreted in the table no 9.

**Table 9: Hypothesis Results - II**

Dependent Variable		Hypothesis Result	Independent variable	
Environment Factors	Related	Partially Accepted	Government Hospitals - Corporate Hospitals	Government Hospitals - Private Hospitals

## CONCLUSION

There is a no significant difference in the service provider related factors and patient related factors influencing the quality of healthcare in different types of hospitals in India, while there is a significant difference in the environment related factors influencing the quality of healthcare in different types of hospitals in India. Also, there is no while there is a significant difference in the environment related factors influencing the quality of healthcare in corporate and private hospitals. The findings of this research concludes that quality of healthcare is same in private and corporate hospitals for environment related factors while government needs require intervention in environment related factors like Enforcement of quality standards like NABH and Resources and facilities. Government hospitals need to get accredited through national accredited agencies like NABH for quality standards in their working and proper management and utilization of resources and facilities to ensure quality in healthcare industry to provide better healthcare services to Indians.

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## ANNEXURE – 1

### Questionnaire

#### SECTION – A

#### Demographic Characteristics

1. Name of Respondent (Optional) : \_\_\_\_\_
2. Name & Address of Hospital (Optional) : \_\_\_\_\_
3. Type of Hospital (Please ✓ the relevant option) :  
 Government Hospital     Corporate Hospital     Private Hospital
4. Profession (Please ✓ the relevant option)  
 Administrator     Doctor     Paramedical Staff     Pharmacist
5. Gender (Please ✓ the relevant option) :  
 Male     Female
6. Age (Please ✓ the relevant option)  
 25-35 Years     35-45 Years     45-50 Years     Above 50 Years
7. Experience (Please ✓ the relevant option)  
 0-3 Years     3-5 Years     5-10 Years     More than 10 Years

#### SECTION-B

#### Factors Influencing Quality in Indian Healthcare Industry

8. Please provide your opinion on the following statements related to TQM practices prevailing in your hospital on five point scale. Options are 1 to 5 where 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree. (Please ✓ the relevant option)

SNo.	Statement	1	2	3	4	5
1	Clean, comfortable and visually attractive environment.					
2	Enforcement of quality standards like NABH.					
3	Caste, gender, education, and income level of patient.					
4	Cooperation by patient / patient's relatives.					
5	Hassle free admission and discharge procedures.					
6	Resources and facilities.					
7	Type and level of patient illness.					
8	Involvement of patient & family in medical decision making process.					
9	Bill and claim settlements.					
10	Competency of doctors, nursing and paramedical staff.					
11	Healthcare team explains the disease treatment process.					
12	Meals are tasty and adapted to patient's nutritious needs.					
13	Services are carried out at appropriate time.					
14	Hospital equipments are upto date and well maintained.					

**ANNEXURE 2**

<b>Profession</b>	<b>Type of Hospital</b>			<b>Total</b>
	<b>Government Hospital</b>	<b>Corporate Hospital</b>	<b>Private Hospital</b>	
Administrator	28	12	30	70
Doctors	39	22	56	117
Paramedical Staff	60	36	74	170
Pharmacist	14	8	21	43
Total	141	78	181	400