

## FACTORS AFFECTING TOTAL QUALITY MANAGEMENT IN INDIAN HEALTHCARE INDUSTRY

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### 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**

| Profession        | Type of Hospital    |                    |                  | Total |
|-------------------|---------------------|--------------------|------------------|-------|
|                   | Government Hospital | Corporate Hospital | Private Hospital |       |
| 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   |