

# **ASSESSING THE SERVICE QUALITY OF SOME SELECTED HOSPITALS IN KARACHI BASED ON THE SERVQUAL MODEL**

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## **Abstract**

The study is aimed at exploring the dimensions of the SERVQUAL model which are the significant determinants of service quality, in terms of patients' satisfaction, in the selected hospitals of Karachi. For this purpose, data was collected from 252 outpatients visiting three selected hospitals each from public sector, private sector and semi-public sector. The technique of factor analysis is used to extract the important factors on the basis of responses obtained from patients. Factor analysis resulted in five factors. The key findings of this study are the regression models obtained for all three hospitals. These models have the predictors that are statistically significant determinants of the patients' satisfaction for each hospital.

**Keywords:** SERVQUAL, Patients satisfaction, public hospitals, private hospitals, semi public hospitals

JEL Classification: I10, I11

## **I      Introduction**

The purpose of this study is to evaluate the performance of some selected hospitals of Karachi on the basis of the SERVQUAL model related to customer service quality. The research objectives of the study are to:

- Ascertain whether the selected hospitals that are operating in Karachi in the public, semi public and private sectors follow all five dimensions (TANGIBLES, RELIABILITY, RESPONSIVENESS, ASSURANCE, & EMPATHY) of the SERVQUAL model.
- Compare gaps among three types of hospitals.
- Identify the areas of maximum and minimum gaps for the items that are related to each dimension of the SERVQUAL model.
- Identify the determinants of patients' satisfaction in the selected hospitals.

The term "service quality" has been defined in several ways. Parasuraman et al. (1985) describes the word service quality as "a measure of the degree of discrepancy between consumers' perceptions and expectations".

"Consumer dissatisfaction occurs when expectations of the consumers are greater than actual performance of service delivering organizations and perceived service quality is less than the satisfactory level."

Gronroos (1984) defines service quality as a function of expectations, outcome and image.

The well known “SERVQUAL scale can be applied to any service providing organization to assess service quality.”(Zeithaml, Parasuraman and Berry (1990)

The five generic dimensions or factors were introduced by Parasuraman *et al* (1988) to measure service quality are:

**Tangibles:** Physical facilities, equipment and appearance of personnel;

**Reliability:** Ability to perform the promised service dependably and accurately;

**Responsiveness:** Willingness to help customers and provide prompt service;

**Security:** Knowledge and courtesy of employees and their ability to inspire trust and confidence; and

**Empathy:** Caring, individualized attention provided to customers.

These dimensions were extracted on the basis of a questionnaire (See Chart 1) consisting of 22 questions that cover the expectations and performance aspect of each dimension of the SERVQUAL model

**Chart 1: Original version of the SERVQUAL scale**

Item		Expectation (E)	Performance (P)
1	<b>Tan gibility</b>	They should have modern equipment.	XYZ has modern equipment.
2		The physical installations should be visually attractive.	XYZ's physical installations are visually attractive.
3		The employees should be well-dressed and clean.	XYZ's employees are well dressed and clean.
4		The appearance of company installations should be conserved according to the service offered.	The appearance of XYZ's physical installations is conserved according to the service offered.
5	<b>Reliability</b>	When these companies promise to do something in a certain time, they must do it.	When XYZ promises to do something in a certain time, it really does it.
6		When clients have any problem with these companies, the later must be solidary and make them feel secure.	When you have a problem with XYZ, it is solidary and makes you feel secure.
7		These companies should be of confidence.	XYZ can be trusted.
8		They should provide the service in the time promised.	XYZ provides the service in the time promised.
9		They should keep their records correctly.	XYZ keeps its records correctly.
10	<b>Responsibility</b>	It should not be expected that they inform clients exactly when the services are to be executed.	XYZ does not inform exactly when services will be executed.
11		It is not reasonable to expect immediate availability of company employees.	You do not receive immediate services from XYZ employees.
12		Company employees do not need to be always available to help clients.	XYZ employees are not always available to help clients.
13		It is normal for them to be too busy to readily respond to requests.	XYZ employees are always too busy to respond to client requests.

14	<b>Security</b>	Clients should be able to believe in the company's employees.	You can believe XYZ employees.
15		Clients should be able to feel safe in negotiating with company employees.	You feel secure negotiating with XYZ employees.
16		The employees should be polite.	XYZ employees are polite.
17		The employees should obtain adequate support from the company to perform their tasks correctly.	XYZ employees do not obtain adequate support from the company to perform their tasks correctly.
18	<b>Empathy</b>	It should not be expected for the companies to pay individual attention to the clients.	XYZ does not pay individual attention to you.
19		It should not be expected for the employees to give personalized attention to the clients.	XYZ employees do not give personal attention.
20		It is absurd to expect the employees to know client needs.	XYZ employees do not know their needs.
21		It is absurd to expect these companies to have the clients' best interests as their objective.	XYZ does not have your best interests as its objective.
22		It should not be expected for the business hours to be convenient for all clients.	XYZ does not have convenient business hours for all clients.

Source: Oliveria (2008)

## II. Literature Review

Andaleeb (2008) studied patient satisfaction (measured by using factor analysis). This study was conducted on caregivers who had accompanied a child came to a hospital in Dhaka. A regression model was constructed by using factor analysis based upon the five dimensional SERVQUAL model. The model explained 67.4% of the variation in the patients'

satisfaction which was taken as the dependent variable. The behavior of the nurses, the behavior of the doctors and facilitation payments (staff expectation of extra payment for normal services that were provided to the patients) had been appeared as statistically significant determinants of patients' satisfaction. Tangibles composite (all the items that were related to the cleanliness of the hospital and staff) and input adequacy (availability of medicines and equipment whenever needed), appeared as statistically insignificant.

**Babakus and Mangold (1992)** assessed patients' perceptions of service quality in a hospital environment. A modified SERVQUAL scale with 15 pairs of questions having 5 point scale was used. Factor analysis and correlation were used to assess the validity of the study. Reliability coefficients for all five dimensions were found greater than 0.5.

**Kang and James (2004)** applied the SERVQUAL model in the cell phone industry based on European perspective<sup>1</sup>. A total of 464 users of two specific cell phone companies in South Korea were interviewed. Interviewees were asked to rate questions in the questionnaire constructed for 3 constructs i.e. functional quality, technical quality, image and their impact on overall service quality and customer satisfaction. Confirmatory Factor Analysis (CFA) was conducted to check the uni-dimensionality of the construct. Initial results did confirm the five-factor structure of the SERVQUAL model. The results of the study indicated that functional and technical quality influence the perceptions that are related to the overall service quality.

**Karassavidou (2009)** aimed to identify the service quality dimension used by patients for service quality evaluation in Greek NHS (National Services Hospitals). A SERVQUAL questionnaire, including an expectation and perception section, each consisting of 26 statements having seven point Likert scale was used for the survey. A survey of 137 patients was conducted in six hospitals located in Northern Greece. In this study, principal component

method was used to extract factors. Factor analysis resulted in three extracted factors. Alpha coefficient ranged from 0.785 to 0.996 and confirmed the reliability of all three dimensions. Gap analysis was also performed to determine the degree to which the difference between expectations and perceptions exist among patients surveyed.

**Lim and Tang (2000)** examined patients' expectations and perceptions about hospital service quality in Singapore. In the beginning, the survey instrument was designed with five dimensions of the SERVQUAL model. The instrument consisted of 25 questions having 5 point Likert scale. In this study another dimension "accessibility and affordability" was added to the questionnaire in the form of three additional questions that were different from original SERVQUAL model. This additional dimension would also be included as the part of the present study.

In addition to this, the questionnaire also had a question on "overall importance" in the expectation section and another question "overall rating of service quality" in the perception section. 252 satisfactorily filled questionnaires out of 300 were collected from four general practitioners and two specialist clinics. The question related to the overall rating of service quality is also included in the present study. SERVQUAL score was calculated by using mean and standard deviation. Mann-Whitney test was applied to test the hypothesis that there was no difference in the mean gap (mean difference between the ratings of expectations and perceptions). In this study assurance and responsiveness appeared to be the most important dimensions of hospital services.

**Manaf and Nooi (2009)** based their study upon the difference in perceptions and expectations of in-patients and out-patients on the basis of SERVQUAL model adapted for the health care industry in Malaysia. Surveys of outpatients and inpatients were conducted and 646 inpatients and 570 outpatients' usable questionnaires were analyzed. Factor analysis was carried out for both inpatient and outpatient data. This yielded with two factors, namely clinical dimensions of service<sup>2</sup> and physical dimension of service<sup>3</sup>.

**Miranda et.al.** (2010) based their study on the SERVQUAL model and measured the gap between the perceptions of health managers and that of patients'. Patients' satisfaction was taken as the dependent variable and the variables, Health staff (doctors and nurses), Efficiency (waiting times and the time it takes to resolve complaints), No Health Staff (administrative staff), and Facilities (cleanliness, equipment and the location of the health center) were taken as independent variables. The gap between the perceptions of health managers and patients were measured and most of them were found to have statistically significant negative values.

**Mostafa** (2005) tested perceptions of service quality in Egypt from the perspective of public and private hospital patients and attempted to seek an answer to the question; how do patients evaluate service quality by using relevant dimension. A survey of a total of 500 patients, from 12 hospitals of Egypt was conducted, and resulted in 332 successfully filled questionnaires. This questionnaire was designed on the basis of the five dimensional SERVQUAL model having 5-point Likert rating scale. The results of the survey highlighted a three factor solution of the SERVQUAL model. A statistically significant difference in terms of service quality was observed between public and private hospitals.

**Oliveria and Ferreira's** (2008) measured service quality at a higher education institute in Brazil. This was a survey based research. The survey instrument was five dimensional SERVQUAL model. The instrument consisted of 19 items having 7 point Likert scale. The gaps between expectations and perceptions for all 19 items had been measured. The questionnaire was applied to 38 beginning students in the Production Engineering course. The results show that the gaps for all 19 items were negative and this implies that the expectations of the students were higher as compared to the perceptions.

Parasuraman et al. (1985) used the original ten dimensions of the SERVQUAL Model in their study. They defined quality as a gap between expectations and performance. In-depth interviews of 3 - 4 executives from four recognized service firms and a total of 12 focus group interviews of consumers were conducted to gain insights about:

- The perceptions of managers regarding key attributes of service quality
- The consumers' perceptions regarding the key attributes of quality in services
- Do discrepancies exist between the perceptions of consumers and service marketers?
- Can consumer and marketer perceptions be combined in a general model that explains service quality from the consumer's standpoint?

The authors' exploratory research revealed 10 evaluative dimensions or criteria that covered variety of services. The researchers developed the items that cover these 10 dimensions. They had mentioned seven propositions to measure the gap between expectations and perceptions.

Parasuraman et al. (1988) described the development of a 22-item instrument of the SERVQUAL model having 5 dimensions to assess perceptions of customers regarding service quality in service and retailing organizations. The researchers had selected four major well known service providing businesses: a bank, a credit care company, a firm offering appliance repairs and maintenance services and a long-distance telephone company. They ended up with a 22-item instrument having five dimensions. All four different firms, from which the data was

collected to perform factor analysis, yielded five extracted factors with the same items loaded on each factor and having factor loadings greater than 0.5 cut-off value. The reliability coefficients (Cronbach's Alpha) were all greater than the cut-off value of 0.6. This signifies the internal validity of the factors. Scale's validity was also assessed with the use of analysis of variance.

Sohail's (2003) objective was to assess the dimensions of the SERVQUAL model that influence the perception of patients regarding the service quality in private hospitals in Malaysia. Patients' satisfaction was taken as dependent variable and it was measured on the basis of five dimensions defined in the SERVQUAL model. The research instrument was a questionnaire based upon a modified version of SERVQUAL having five dimensions Tangibility, Reliability, Responsiveness, Assurance and Empathy and it consisted of 15 pairs of matching expectation/perception items. A total of 186 responses were obtained and this represented a response rate of 18.6%. To address construct validity of the study, factor analysis was conducted. None of the reliability alphas were below the cut-off point of 0.60. The mean scores of the patients' expectations of service quality were generally low.

Yesilada and Direktor (2010) extracted the dimensions of the SERVQUAL model in both public and private hospitals. In the survey, 990 people living in Northern Cyprus, above 18 years of age were selected for the survey. 806 people contributed their responses. A 22 items-SERVQUAL model with 5-point "agree-disagree" Likert scale was used. Three factors were extracted through factor analysis, with 61.5% explained variance. Reliability –confidence, empathy and tangibility appeared as the most important dimensions of service quality. Private hospitals appeared with smaller gaps between expectations and perceptions (not negligibly small), as compared to the public hospitals and were perceived as better service providers.

### **III. Methodology**

#### **III.1 Data Collection**

In this study, three hospitals are selected that are operating in Karachi. The study is conducted from September 15 to October 8, 2010. To give appropriate representation to the population of the city, one hospital each from the public sector, the semi-public and the private sector was selected. Both the hospital authorities and patients were given assurance of anonymity. Target population was the out-patients who visit the consulting and executive clinics of the three selected hospitals during their operating hours (morning and evening hours).

As a sampling technique, systematic sampling was used to select every  $k^{\text{th}}$  patient<sup>4</sup> as a respondent. Systematic sampling was used to collect data because the entire population was homogenous in terms of the purpose for which they had come to the hospital. The number of patients sitting in the waiting lounge was considered as the population and 20% of the individuals were selected as the part of the sample. During the data collection, we found that from 20 to 30 patients per executive/consulting clinic visited these hospitals during consulting hours.

During the data collection, we have faced the difficulty of lack of cooperation when the individuals who were selected, refused to be the part of the study (Approximately between 40 to 50 % of them refused). The lowest numbers of respondents were from the public hospital where people were least willing to cooperate. Even though, the questionnaire in Urdu and was especially designed, keeping in view the difficulty that the respondents may face, most of the individuals who visit public hospitals are not well educated. The lack of cooperation within the public hospital patients was mainly because they had been kept waiting for so long as they were finished with the consultation they were eager to leave the hospital premises immediately.

This data collection activity was spread over the three weeks (one week each for each hospital). The number of respondents from the private hospital, the semi-public hospital, and the public hospital was 96, 90, and 66 (a total of 252) respectively. The lowest numbers of respondents were from public hospital where people were least willing to cooperate.

### **III.2 Research Instrument**

The research instrument for this study was a questionnaire having 26 items and each item was divided into two parts in such a manner that the first part of each item measures the expectations of the patients and the second part measures the perceptions of the patients based upon their experiences. Each question is constructed with the 5-points Likert scale rating from 1 (strongly disagree) to 5 (strongly agree). Questionnaire was also translated in Urdu for the respondents who did not understand English.

In this study, five dimensions of the original SERVQUAL model that is Tangibility, Reliability, Responsibility, Assurance and Empathy were incorporated and an additional dimension Accessibility & Affordability included in Lim & Tang (2005) was also incorporated.

*Tangibility includes questions related to Physical facilities, equipment and appearance of personnel.*

Questions related to hospital equipment, other facilities apparent get up and out going personalities of doctors and paramedical staff were a vital part of the previous studies (Babakus (1992), Lim and Tang (2000), Sohail (2003), Mostafa (2005), Karassavidou (2009), and Miranda (2010)). This study has also included these questions in Tangibility dimension. (*Question no. 1 to Question no. 5 in the questionnaire*)

The question related to privacy during the treatment was only included by Lim and Tang (2000) in the Tangibility dimension, and we have also included this question as a part of Tangibility dimension. (Question no. 5)

Lim and Tang (2000) and Karassavidou (2009) have used modified version of SERVQUAL by adding a new dimension “Accessibility and Affordability” in their studies. A question on adequate parking facilities was included in both studies.

Questions about the easy accessibility to hospital location, and affordability of hospital services, are also the part of our questionnaire (Question no. 25 and question no. 26). Previous researchers like Lim and Tang (2000), and Karassavidou (2009) have also studied these dimensions.

*Ability to perform the promised service dependably and accurately comes under the definition of Reliability.*

Babakus (1992) and Miranda (2010) had included question about the professionalism and competency of doctors and health staff. This question is also the part of our questionnaire under reliability dimension (Question no. 8).

Question about error-free documentation of medical records, previously used by Babakus (1992), Lim and Tang (2000), Sohail (2003), Mostafa (2005), Karassavidou (2009) is also added in our questionnaire in Reliability dimension (Question no. 9).

Two questions, “Hospitals should provide their services at the time they promise to do so”, and “Services should be carried out right the first time”, were previously included by Babakus (1992), Lim and Tang (2000), Mostafa (2005), Karassavidu (2009), Miranda (2010) in Reliability dimension. (Question no. 6 and question no. 7).

Lim and Tang (2000) included a question about consistency of charges in the same dimension and we are also considering this question. (Question no. 10).

*The fourth dimension **Responsiveness** is defined as Willingness to help customers and provide prompt service.*

Questions related to “provide prompt services”, and “willingness of doctors and health staff to help patients” was considered as a part of responsiveness dimension, by Babakus (1992), Lim and Tang (2000), Sohail (2003), Mostafa (2005), Karassavidou (2009) and we are also including these questions under this dimension. (Question no. 11 and question no. 12) Our next question is about waiting time in health centers, was also the part of Lim and Tang (2000) and Miranda (2010) (Question no. 14).

*The fifth dimension **Assurance**, consists of questions related to competence, courtesy, credibility and security, Knowledge and ability to inspire trust and confidence.*

In this dimension, we are considering a question regarding Secure feeling of patients, receiving medical services, was previously used by Babakus (1992), Sohail (2003), Mostafa (2005), Karassavidou (2009), Miranda (2010).

We have also added a question in this dimension, “Do the Attitude and behavior of doctors/staff instill confidence in patients?”(Question no. 13), adapted by the previous studies of Lim and Tang (2000), Sohail (2003), Mostafa (2005), Karassavidou (2009).

Chart 2- Dimensions and related items

Dimension	Item
Tangibility	up-to-date equipment
	clean & comfortable
	doctors/staff are neat
	informative brochures
	privacy is observed
Reliability	services are provided at
	services are carried out right at
	doctors and staff are
	system of error free and fast
	consistency of charges
Responsiveness	prompt services are given
	doctors and staff are responsive
	attitude of doctors and staff
	waiting time does not exceed
	one hour
Assurance	doctors and staff are courteous and friendly
	doctors possess wide spectrum of knowledge
	patients are treated with dignity and respect
	patients are explained their medical condition thoroughly
Empathy	feedback is obtained from patients
	services are available round the clock
	doctors and staff have patients' best interests at heart
	doctors and staff understand the specific needs of patients
Accessibility & Affordability	hospital has adequate parking facilities
	the location is accessible
	charges for the services rendered are affordable

**Babakus (1992), Lim and Tang (2000), Sohail (2003), Mostafa (2005), Karassavidou (2009), Miranda (2010)** have included questions related to knowledge, friendliness and courtesy of doctors and health staff. And we are also considering these questions in this dimension. (Question no. 13, Question no. 15 & Question no. 16).

**Lim and Tang (2000) and Karassavidou (2009)** have extended this dimension by incorporating two additional questions addressing dignity and respect of patients receiving health services, and how doctors explain medical conditions to patients. So we are considering both questions under the same dimension. (Question no.17)

*The sixth dimension **Empathy** includes access, communication, Caring and individualized attention that the firm provides to its customers.*

**24-hours availability of services, used by Lim and Tang (2000), and Karassavidou (2009),** is included in our questionnaire as a part of Empathy dimension. (Question no. 20)

**Another question in the questionnaire of present study, is related to understanding of specific needs of patients, is previously used by Lim and Tang (2000), Mostafa (2005), Karassavidou (2009), Miranda (2010).** (Question no. 22)

**Interest of doctors and health staff towards problem resolution of their patients was considered previously by Lim and Tang (2000), Mostafa (2005), Karassavidou (2009), Miranda (2010) and we are including this question in our questionnaire.** (Question no. 21).

### III.3 Measures

SPSS 17 is used for data analysis and differences of ratings related to expectations and perceptions were obtained to identify the gap regarding each item of the questionnaire. The purpose was to identify the areas where the maximum and minimum gaps in the selected hospitals exist. This approach was also used in Karassavidou (2009), Lim and Tang (2000), Myercoughs (2002), Sohail (2003), and Yesilada and Direktor (2010).

As a second step, factor analysis was performed. On the basis of the ratings of the perceptions of 252 respondents, factors were extracted as the determinants of the patients' satisfaction<sup>5</sup>. To extract important factors as the determinants of patients' satisfaction, the technique of factor analysis was used as used by Andaleeb (2008), Iwaarden (2003), Kang and James (2004), Karassavidou (2009), Manaf and Nooi (2000), Sohail (2003), Parasuraman (1988), Yesilada and Direktor (2010). Factor loadings were obtained by using Varimax rotation. The consistency of data was checked by using Cronbach alpha that was also used in Babakus and Mangold (1992), Manaf and Nooi (2000), Parasuraman (1988), Sohail (2003) and Mostafa (2005). After performing the factor analysis a regression was run by taking all the extracted factors as the independent variables and patients' satisfaction as the dependent variable (Yesilada & Direktor, 2010). The values of the independent variables were obtained by calculating the mean score of the items that were loaded on each factor. The 26<sup>th</sup> item that measures the patients' satisfaction with overall service quality was used as the dependent variable.

$$Y(\text{patients' satisfaction}) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n$$

Where,

$\beta_i$  : the regression coefficients estimated on the basis of the data

$X_i$  : the independent variables obtained from factor analysis

The regression models were measured in two steps: First, by considering all 252 observations and second them three regression models that were obtained for three hospitals based upon the data collected from each hospital.

#### **IV. Findings & Discussion**

At the first stage of our analysis, the study has been focused on the gap analysis (the difference in the ratings of expectations and perceptions of the respondents). For each item of the questionnaire, the study identified the maximum and minimum gaps so that the areas of strengths and weaknesses for each hospital. In Table 1, only maximum and minimum gaps in the items related to each dimension were presented for all the three hospitals.

In tangibility, the item “doctors/staff are neat in appearance” has minimum difference of 0.7292 for the private hospital while the item “informative brochures are available” has the maximum differences of 1.7879 for the public hospital.

In Reliability, the item “doctor/staff are professional and competent” has the minimum value of 0.9167 for the private hospital and the item “system of error free and fast retrieval of documents” has the maximum value of 1.7556 for the semi-public hospital.

**Table 1- Hospital-wise minimum and maximum gaps in expectations & perceptions**

Dimension	Item	Max.	Min.	Max.	Min.	Max.	Min.
Tangibility	up-to-date equipment						
	clean & comfortable environment						
	doctors/staff are neat		0.73		0.98		0.9091
	informative brochures	1.2917		1.667		1.788	
Reliability	privacy is observed						
	services are provided at appointed time					1.515	
	services are carried out right at the first time						
	Doctors and staff are professional and competent		0.92		1.13		1.2424
	system of error free and fast retrieval of documents exists			1.756		1.515	
consistency of charges	1.6042						
Responsiveness	prompt services are given				1.42		1.3636
	doctors and staff are responsive				1.42		1.3636
	attitude of doctors and staff instill confidence in patients		0.96				
	waiting time does not exceed one hour	2.0833		1.711		2	

**Table-1 (continuation)**

Dimension	Item	Max.	Min.	Max.	Min.	Max.	Min.
Assurance	doctors and staff are courteous and friendly						
	doctors possess wide spectrum of knowledge				1.0889		.9394
	patients are treated with dignity and respect		.8750				
	patients are explained their medical condition thoroughly	1.1875		1.6222		2.1515	
Empathy	feedback is obtained from patients	1.5833		2.0222		2.4545	
	services are available round the clock		1.0625		1.5111		.8788
	doctors and staff have patients' best interests at heart						
	doctors and staff understand the specific needs of patients						
Accessibility & Affordability	hospital has adequate parking facilities						
	the location is accessible		.7708		1.0000		.7879
	charges for the services rendered are affordable	1.8125		1.9111		2.3333	

In Responsiveness, the item “attitude of doctors and staff instill confidence in patients” has the minimum mean difference of 0.9583 for the private hospital and the item “waiting time should not exceed one hour” has the maximum mean rating of 2.0833 for the private hospital.

In Assurance, the item “patients are treated with dignity and respect” has the minimum mean difference of 0.875 for the private hospital and the item “patients are explained their medical condition thoroughly has the highest mean difference of 2.1515 for the public hospital.

For Empathy, the item “services are available round the clock” is found with the minimum value of 0.8788 lowest for the public hospital and the item “feedback is obtained from patients has the highest mean difference of 2.4545 for the public hospital.

For Accessibility & Affordability, the item “the location is accessible” has the minimum mean difference of 0.7708 *for the private hospital and the maximum difference of 2.3333 in mean ratings is observed for the item “charges for the services rendered are affordable” for the public hospital.*

In the second stage, exploratory factor analysis was performed (see Appendix 2 for SPSS output of Factor Analysis), by taking the ratings of the perception of respondents regarding each item then these extracted factors were used to determine patients’ satisfaction. The results are displayed in table 2.

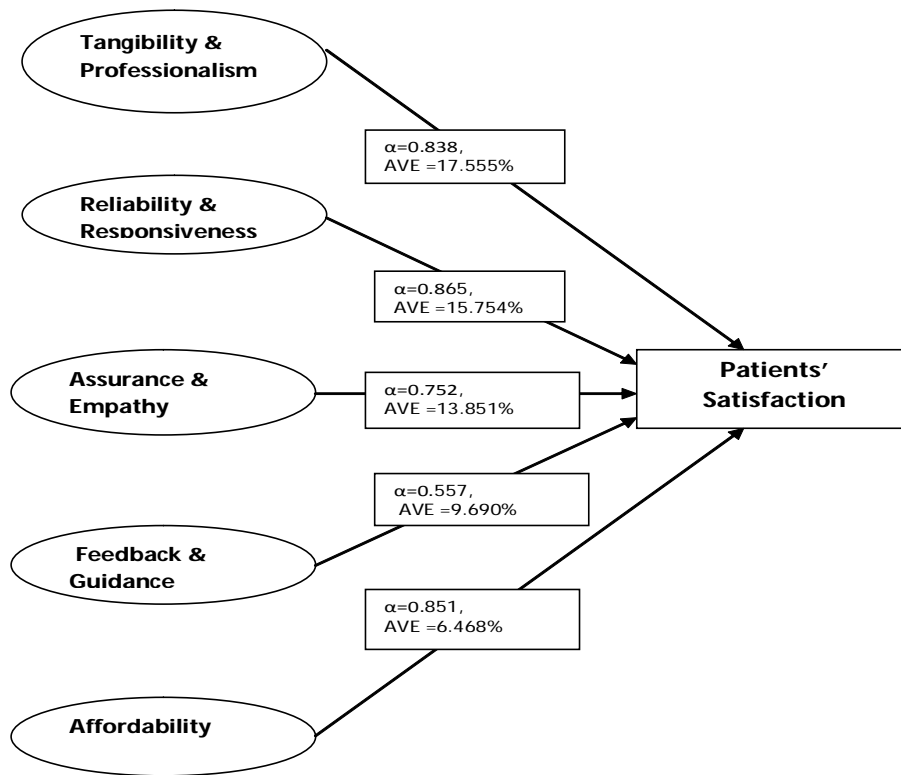
Five factors were extracted as a result of factor analysis. According to the nature of the items that were loaded on a factor; they are named as Tangibility & Professionalism, Reliability & responsiveness, Assurance & Empathy, Feedback, and Affordability.

**Table 2- Extracted Factors, Factor Loadings, Cronbach Alpha and Average Variance Extracted**

<b>Dimensions /Items</b>	<b>Factor Loadings</b>	<b>Cronbach Alpha(<math>\alpha</math>)</b>	<b>Average Variance Extracted (AVE)</b>
<b><u>Tangibility and Professionalism</u></b> Up to date and well maintained equipment Doctors and staff are neat in appearance Doctors and staff are professional and competent System of error free and fast retrieval of documents Doctors possess wide spectrum of knowledge The location is accessible	0.774 0.671 0.705 0.662 0.617 0.541	0.838	17.555
<b><u>Reliability &amp; Responsiveness</u></b> Privacy is observed during treatment Services are provided at appointed time Services are carried out right at the first time Doctors and staff are responsive Attitude of doctors and staff instill confidence in patients waiting time does not exceed one hour	0.590 0.684 0.638 0.515 0.636 0.772	0.865	15.754
<b><u>Assurance and Empathy</u></b> Doctors and staff are courteous and friendly Patients are treated with dignity and respect Doctors and staff have patients' best interest at heart Doctors and staff understand the specific needs of a patient	0.574 0.623 0.778 0.803	0.752	13.851
<b><u>Feedback and Guidance</u></b> Informative brochures are available Patients are explained their medical condition thoroughly Feedback is obtained from patients	0.573 0.792 0.807	0.557	9.690
<b><u>Affordability</u></b> Consistency of charges Charges for the services rendered are affordable	0.704 0.81	0.851	6.498

The reliability coefficients (Cronbach Alpha) are all greater than 0.5 (see appendix 3) and ranged from 0.577 to 0.865 except for the factor (named as affordability) for which the value is below the cut off value of 0.6. The total variance explained on the basis of rotated factor loading is 63.349. The average variances extracted by each of factors are 17.555 (tangibility & professionalism), 15.754 (reliability & responsiveness), 13.851 (assurance & empathy), 9.690 (feedback & guidance) and 6.498 (affordability) respectively. Chart 3 gives the flow chart of determinants with alpha ( $\alpha$ ) values and average variance extracted by each factor.

**CHART 3 – Determinants of Patients’ Satisfaction extracted from Exploratory Factor Analysis with Cronbach Alpha and Average Variance Extracted Values**



In the third stage of data analysis, regression analysis was performed by taking the ratings of 252 respondents on the basis of items related to the extracted factors. These extracted factors have been taken as the independent variables while patients' satisfaction (measured with the help of ratings given to the 26<sup>th</sup> item<sup>6</sup> of the questionnaire) as the dependent variable. The results of regression analysis are presented in tables 3 (a) through 3 (c). From table 3 (a), R Square for the regression model is 0.694 with the standard error of the estimate having a very low value of 0.32086. Table 3 (b) gives the results of analysis of variance and it shows that ANOVA is statistically significant. It adds further reliability to the regression model.

**Table 3 (a)**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.833 <sup>a</sup>	.694	.687	.32806

**Table 3 (b)**

ANOVA<sup>b</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	59.954	5	11.991	111.417	.000 <sup>a</sup>
	Residual	26.475	246	.108		
	Total	86.429	251			

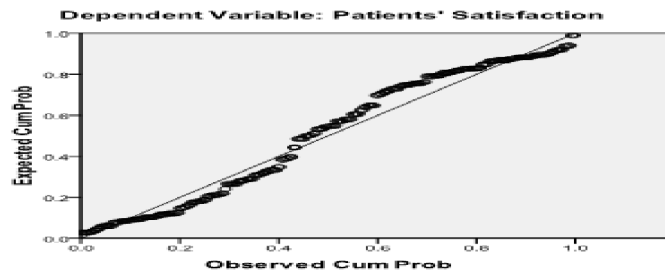
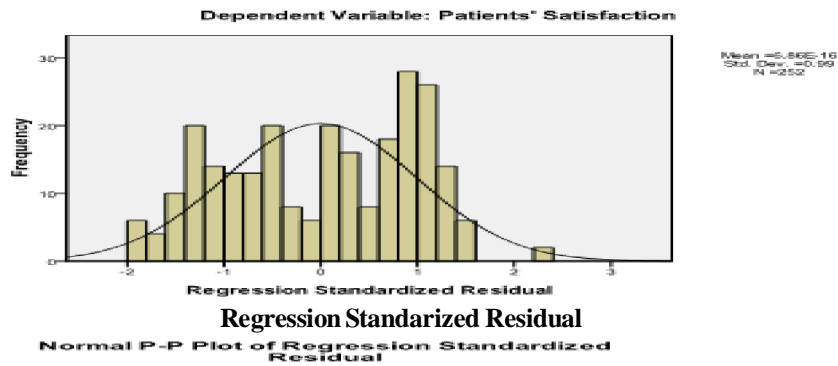
Table (3 c) gives the regression coefficients for the model based upon the extracted factors. All the five factors that were extracted on the basis of factor analysis are found statistically significant to determine patients' satisfaction except the factor named as feedback and guidance.

**Table 3 c (Regression Coefficients – All Hospitals)**

		Coefficients <sup>a</sup>				
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	.620	.139		4.476	.000
	Tangibility & Professionalism	.218	.047	.235	4.687	.000
	Reliability & Responsiveness	.341	.042	.414	8.143	.000
	Assurance & Empathy	.162	.041	.225	4.000	.000
	Feedback & Guidance	.044	.030	.067	1.446	.150
	Affordability	.055	.025	.083	2.194	.029

a. D

**Histogram**



After performing analysis of variance, the predictive ability of the regression model was checked on the basis of histogram and P-P Plot of the dependent variable (patients' satisfaction) and the regression standardized residuals was obtained. It also shows that the residuals are approximately normally distributed, while histogram indicated some extreme frequencies in the region having standardized residual values between 0.6 and 1.4.

Histogram and normal P-P plot suggested that the elimination of 'feedback and guidance' from the model. After removing this factor another regression model was run. The results of the regression model after removing the stated variable are displayed in tables 4 (a) through 4 (c).

**Table 4 (a)**

**Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.831 <sup>a</sup>	.691	.686	.32878

**Table 4 (b)**

**ANOVA<sup>b</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	59.729	4	14.932	138.139	.000 <sup>a</sup>
	Residual	26.700	247	.108		
	Total	86.429	251			

a. Predictors: (Constant), Affordability, Reliability & Responsibility, Tangibility & Professionalism, Empathy

b. Dependent Variable: Patients' Satisfaction

The model has R square of 0.691 with approximately same standard error. Table 4 b gives the results of ANOVA for the model has a relatively greater F-value as compared with the initially fitted model.

Table 4 (c) indicates the statistical significance of the predictors included in the regression model. All the independent variables that were included in the regression model have p-values less than 0.05. On the basis of the finding in table 4 (c) we obtain the regression model:

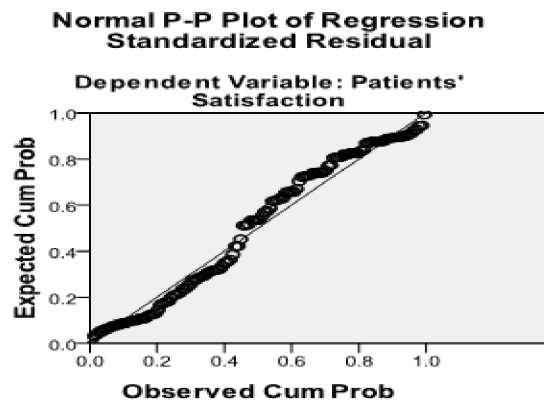
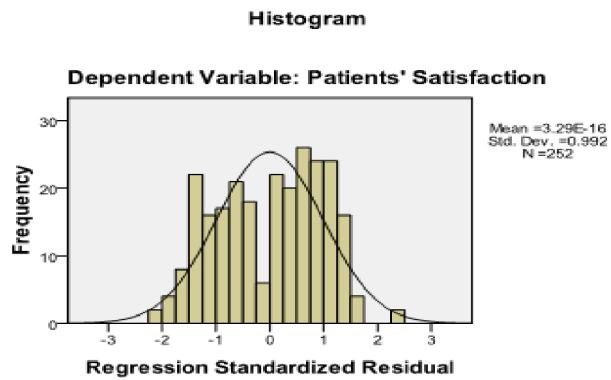
$$Y (\text{Patients' satisfaction}) = 0.632 + 0.222 (\text{tangibility \& professionalism}) + 0.343 (\text{reliability \& responsiveness}) + 0.189 (\text{assurance \& empathy}) + 0.058 (\text{affordability})$$

**Table 4 (c)**

**Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.632	.139		4.558	.000
Tangibility & Professionalism	.222	.047	.238	4.750	.000
Reliability & Responsiveness	.343	.042	.417	8.193	.000
Assurance & Empathy	.189	.036	.262	5.210	.000
Affordability	.058	.025	.089	2.340	.020

a. Dependent Variable: Patients' Satisfaction



In the fourth stage of the data analysis, separate models were obtained for the three hospitals. Preliminary data analysis indicated that different combinations of predictors were statistically significant for each hospital set up.

**Table 5 (Regression model For Private Hospital)**

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.718 <sup>a</sup>	.516	.500	.33509

a. Predictors: (Constant), affordability, reliability & responsiveness, feedback & guidance

ANOVA<sup>b</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.003	3	3.668	32.664	.000 <sup>a</sup>
	Residual	10.330	92	.112		
	Total	21.333	95			

a. Predictors: (Constant), affordability, reliability & responsiveness, feedback & guidance

b. Dependent Variable: patients' satisfaction

Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.579	.232		6.813	.000
	reliability & responsiveness	.298	.070	.349	4.241	.000
	feedback & guidance	.196	.045	.367	4.371	.000
	affordability	.107	.043	.202	2.486	.015

a. Dependent Variable: patients' satisfaction

Table 5 summarizes the results of the regression model that is obtained for the private hospital based upon the perceptions of 95 respondents. It has a R square value of 0.516 with the standard error of the estimate 0.33509. ANOVA showed an F value of 32.664 and reliability & responsiveness, feedback & guidance and affordability appeared as the strong predictors of patients' satisfaction with the p-values below 0.02. The regression model obtained for the private hospital is:

$$Y (\text{patients' satisfaction}) = 1.579 + 0.298 (\text{reliability \& responsiveness}) + 0.196 (\text{feedback \& guidance}) + 0.107 (\text{affordability})$$

Table 6 (a) and 6 (b), gives the results for the regression model obtained for the semi-public hospital based upon the perceptions of 90 respondents. The R square value for the model is 0.775 with the standard error estimate for the model was 0.3. ANOVA was statistically significant with the F value of 98.832.

**Table 6 (a) & (b) (Model Summary for Semi-private hospital)  
Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.880 <sup>a</sup>	.775	.767	.30028

a. Predictors: (Constant), empathy, tangibility & professionalism, reliability & responsiveness

**ANOVA<sup>b</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26.734	3	8.911	98.832	.000 <sup>a</sup>
	Residual	7.754	86	.090		
	Total	34.489	89			

a. Predictors: (Constant), empathy, tangibility & professionalism, reliability & responsiveness

b. Dependent Variable: patients' satisfaction

In the regression model, the factors, tangibility & professionalism, reliability and responsiveness and empathy, appeared as the statistically significant predictors (with p values closer to zero) for the patients' satisfaction for the semi-government hospital selected for the study.

The regression model for the semi-government hospital is:

$$Y (\text{patients' satisfaction}) = 0.375 + 0.283 (\text{tangibility \& Professionalism}) + 0.325 (\text{reliability \& responsiveness}) + 0.282 (\text{assurance \& empathy})$$

**Table 6 c (Regression coefficients for Semi-public Hospital Coefficients<sup>a</sup>)**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.375	.187		2.007	.048
	tangibility & professionalism	.283	.061	.321	4.675	.000
	reliability & responsiveness	.325	.069	.356	4.715	.000
	Assurance & empathy	.282	.051	.360	5.560	.000

Table 7 gives the results of the regression model obtained for the public sector hospital selected for the study. The R square for the model was 0.769 with the standard error of 0.325. ANOVA is found to be statistically significant with the F value of 68.770. The variables tangibility & professionalism, reliability & responsiveness, and empathy appeared as strong predictors of patients' satisfaction for the hospital operated by the public sector.

The regression model for the Public Hospital is:  
 $Y$  (patients' satisfaction) = 0.875 + 0.195 (tangibility & Professionalism) + 0.366 (reliability & responsiveness) + 0.161 (empathy)

**Table 7 (Regression model for Public Hospital)**

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.877 <sup>a</sup>	.769	.758	.32513

a. Predictors: (Constant), empathy, reliability & responsiveness, tangibility & professionalism

**ANOVA<sup>b</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21.809	3	7.270	68.770	.000 <sup>a</sup>
	Residual	6.554	62	.106		
	Total	28.364	65			

a. Predictors: (Constant), empathy, reliability & responsiveness, tangibility & professionalism

b. Dependent Variable: patients' satisfaction

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.875	.237		3.693	.000
	tangibility & professionalism	.195	.113	.208	1.720	.090
	reliability & responsiveness	.366	.072	.508	5.076	.000
	Assurance & empathy	.161	.087	.227	1.854	.069

a. Dependent Variable: patients' satisfaction

### Conclusions and Recommendations

The paper provides health care managers and administrators an opportunity to identify the dimensions of the service quality in which larger gaps between the patients' expectations and perceptions were found in the three hospitals. In this context, the gap analysis has revealed that the following items have very large gaps.

- Availability of informative brochures
- Error free and fast retrieval of documents
- Waiting times
- Counseling of patients regarding their treatment
- Feedback of patients regarding service quality
- Affordability of charges

Hospital-based comparison identifies that the maximum gap regarding availability of informative brochures has been observed among the respondents who have visited the public hospital. This result is expected because of the fact the public hospitals are not profit oriented but service oriented entities and their spending depends upon the governments' budgetary allocations and for that reason public sector hospitals have much less to spend on informative brochures as compared to the private sector hospitals. Error free and fast retrieval of documents is the area of concern for the respondents who have visited the semi-private hospital. Waiting time is the area of grievance among the visitors of the private hospital. Respondents of public hospitals have rated the items 'medical condition thoroughly', 'feedback obtained from patients' and 'affordability of charges' in a way that gives the larger gaps between their expectations and perceptions regarding quality of service that they are provided. Table 8 gives the summary of the regression models that were run in this study.

**Table 8 – Summary of the Regression Models**

<b>Hospital</b>	<b>Determinants of Patients' Satisfaction</b>	<b>Regression Coefficient</b>	<b>Significance</b>	<b>R-Square</b>
<b>All</b>	Constant	0.632	0.0000	0.691
	Tangibility & Professionalism	0.222	0.0000	
	Reliability & Responsiveness	0.343	0.0000	
	Assurance & Empathy	0.189	0.0000	
	Affordability	0.058	0.0200	
<b>Private</b>	Constant	1.579	0.0000	0.516
	Reliability & Responsiveness	0.298	0.0000	
	Feedback & Guidance	0.196	0.0000	
	Affordability	0.107	0.0150	
<b>Semi-Public</b>	Constant	0.375	0.0480	0.775
	Tangibility & Professionalism	0.283	0.0000	
	Reliability & Responsiveness	0.325	0.0000	
	Assurance & Empathy	0.282	0.0000	
<b>Public</b>	Constant	0.875	0.0000	0.769
	Tangibility & Professionalism	0.195	0.0900	
	Reliability & Responsiveness	0.366	0.0000	
	Assurance & Empathy	0.161	0.0690	

The technique of regression analysis, when applied to the entire data set, has shown that the factors reliability & responsiveness, tangibility & professionalism, Empathy and Affordability as the statistically significant determinants of patients' satisfaction.

In the regression model obtained on the basis of perceptions of 95 respondents in the private hospital, the factors reliability & responsiveness, feedback and guidance, and affordability are found statistically significant determinants of

patients' satisfaction. The findings indicate that the management of the private hospital considered in the study has to work in the areas that appeared as the significant determinants of patients' satisfaction. They have to especially focus on shortening the waiting time of the patients and make sure the availability of the doctors at the appointed time. They have also to focus on the affordability aspect of the service.

The regression model obtained for the semi-public hospital has resulted in the factors of reliability & responsiveness, tangibility & professionalism and empathy as the statistically significant determinants of patients' satisfaction. This model is based upon 90 respondents who have visited the selected semi-public hospital at the time of data collection. The management of this hospital has to give more emphasis on the cleanliness of the hospital and to make their staff more courteous. They have also to improve the system of fast and error free retrieval of documents and they have to make their staff more courteous and responsive because these are some of the aspects of the service quality with which patients are most dissatisfied and need immediate attention.

In the public hospital selected for the study, the regression model based upon the perceptions of 66 respondents identifies the factors of reliability and responsiveness, tangibility & professionalism and empathy as the statistically significant predictors of patients' satisfaction. According to the findings of this study the areas of immediate attention with which patients can be made more satisfied are the cleanliness of the hospital, waiting times, proper attention and guidance to the patients regarding their medical condition and feedback of the patients. The public hospitals are the only sign of hope and source of getting medical treatment for the masses as the majority of our population lives below the poverty line and they cannot afford to get medical treatment in the private hospitals.

In comparison with the overall regression model the factor of reliability & responsiveness is the common factor appeared with the highest factor loadings in all regression models. The factors of tangibility & professionalism and empathy have appeared in the regression models obtained for the semi-public and public sector hospitals. The factors of feedback & guidance and affordability have appeared as the determinants of patients' satisfaction only in the regression model obtained for the private hospital.

The target audience of this paper is the management of the hospitals considered in the study. The findings of this research paper highlight the areas where management of each hospital has to make improvements to increase patients' satisfaction because the gaps in perceptions and expectations of the patients are critically important for their performance improvement.

**Notes**

- 1- It is based upon three dimensions, technical, functional and image to determine the service quality instead of functional quality dimension that is characterized by five components in the original SERVQUAL model.
- 2- It includes the services of doctors and nurses, clinical treatment received, the way the patients were managed or treated, and the information given about the condition of patient
- 3- It includes cleanliness, environment, noise in ward, management of visitors, registration process, comfort of waiting room, atmosphere of pharmacy.
- 4- It was determined by taking 20% of the patients selected as the respondents who visited the hospitals during data collection period.
- 5- It is the degree to which individual regards the health care service or product or the manner in which it is delivered by the provider as useful, effective or beneficial.  
Source: [www.biology-online.org/dictionary/patient\\_satisfaction](http://www.biology-online.org/dictionary/patient_satisfaction)
- 6- How do you rate the overall service quality of this hospital?

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**APPENDIX 1**

**Questionnaire**

Gender:    M / F Age: \_\_\_\_\_ Area of Residence: \_\_\_\_\_

**1.** The hospital should have up-to-date and well-maintained medical facilities and equipment

**1(a).** The hospital has up-to-date and well-maintained medical facilities and Equipment

1.	1	2	3	4	5
1(a).	1	2	3	4	5
					strongly agree
	strongly disagree				

**2.** The hospital should have clean and comfortable environment with good directional signs.

**2(a).** The hospital should has clean and comfortable environment with good directional signs.

2.	1	2	3	4	5
2(a).	1	2	3	4	5
					strongly agree
	strongly disagree				

**3.** Doctors /staff should be neat in appearance.

**3(a).** Doctors /staff are neat in appearance.

3.	1	2	3	4	5
3(a).	1	2	3	4	5
					strongly agree
	strongly disagree				

**4.** Informative brochures about services should be available.

**4(a).** Informative brochures about services are available.

4.	1	2	3	4	5
4(a).	1	2	3	4	5
					strongly agree
	strongly disagree				

**5.** Privacy should be observed during treatment.

**5(a).** Privacy is observed during treatment.

5.	1	2	3	4	5
5(a).	1	2	3	4	5
					strongly agree
	strongly disagree				

**6.** Services should be provided at appointed time.

**6(a).** Services are provided at appointed time.

6.	1	2	3	4	5
6(a).	1	2	3	4	5
	strongly disagree			strongly agree	

**7.** Services should be carried out right the first time.

**7(a).** Services are carried out right the first time.

7.	1	2	3	4	5
7(a).	1	2	3	4	5
	strongly disagree			strongly agree	

**8.** Doctors/staff should be professional and competent.

**8(a).** Doctors/staff are professional and competent.

8.	1	2	3	4	5
8(a).	1	2	3	4	5
	strongly disagree			strongly agree	

**9.** The hospital should have the system of error free and fast retrieval of documents.

**9(a).** The hospital has the system of error free and fast retrieval of documents.

9.	1	2	3	4	5
9(a).	1	2	3	4	5
	strongly disagree			strongly agree	

**10.** There should be consistency of service charges.

**10(a).** There is a consistency of service charges.

10.	1	2	3	4	5
10(a).	1	2	3	4	5
	strongly disagree			strongly agree	

**11.** Patients should be given prompt services.

**11(a).** Patients are given prompt services.

11.	1	2	3	4	5
11(a).	1	2	3	4	5
	strongly disagree			strongly agree	

**12.** Doctors /staff should be responsive.

**12(a).** Doctors /staff are responsive.

12.	1	2	3	4	5
12(a).	1	2	3	4	5
	strongly disagree			strongly agree	

**13.** Attitude of doctors/staff should instill confidence in patients.

**13(a).** Attitude of doctors/staff instill confidence in patients.

13.	1	2	3	4	5
13(a).	1	2	3	4	5
	strongly disagree			strongly agree	

**14.** Waiting time should not exceed one hour.

**14(a).** Waiting time does not exceed one hour.

14.	1	2	3	4	5
14(a).	1	2	3	4	5
	strongly disagree			strongly agree	

**15.** Doctors/staff should be courteous and friendly.

**15(a).** Doctors/staff are courteous and friendly.

15.	1	2	3	4	5
15(a).	1	2	3	4	5
	strongly disagree			strongly agree	

**16.** Doctor should possess wide spectrum of knowledge.

**16(a).** Doctors possess wide spectrum of knowledge.

16.	1	2	3	4	5
16(a).	1	2	3	4	5
	strongly disagree			strongly agree	

**17.** Patients should be treated with dignity and respect.

**17(a).** Patients are treated with dignity and respect.

17.	1	2	3	4	5
17(a).	1	2	3	4	5
	strongly disagree			strongly agree	

**18.** Patients should be explained their medical condition thoroughly.

**18(a).** Patients are explained their medical condition thoroughly.

18.	1	2	3	4	5
18(a).	1	2	3	4	5
	strongly disagree			strongly agree	

**19.** Feedback should be obtained from patients.

- 19(a).** Feedback is obtained from patients.
- |        |                   |   |   |                |   |
|--------|-------------------|---|---|----------------|---|
| 19.    | 1                 | 2 | 3 | 4              | 5 |
| 19(a). | 1                 | 2 | 3 | 4              | 5 |
|        | strongly disagree |   |   | strongly agree |   |
- 20.** Service should be available round the clock.
- 20(a).** Services are available round the clock.
- |        |                   |   |   |                |   |
|--------|-------------------|---|---|----------------|---|
| 20.    | 1                 | 2 | 3 | 4              | 5 |
| 20(a). | 1                 | 2 | 3 | 4              | 5 |
|        | strongly disagree |   |   | strongly agree |   |
- 21.** Doctors /staff should have patients' best interests at heart.
- 21(a).** Doctors /staff have patients' best interests at heart.
- |        |                   |   |   |                |   |
|--------|-------------------|---|---|----------------|---|
| 21.    | 1                 | 2 | 3 | 4              | 5 |
| 21(a). | 1                 | 2 | 3 | 4              | 5 |
|        | strongly disagree |   |   | strongly agree |   |
- 22.** Doctors/staff should understand the specific needs of patients.
- 22(a).** Doctors/staff understand the specific needs of patients.
- |        |                   |   |   |                |   |
|--------|-------------------|---|---|----------------|---|
| 22.    | 1                 | 2 | 3 | 4              | 5 |
| 22(a). | 1                 | 2 | 3 | 4              | 5 |
|        | strongly disagree |   |   | strongly agree |   |
- 23.** Hospital should have adequate parking facilities.
- 23(a).** Hospital has adequate parking facilities.
- |        |                   |   |   |                |   |
|--------|-------------------|---|---|----------------|---|
| 23.    | 1                 | 2 | 3 | 4              | 5 |
| 23(a). | 1                 | 2 | 3 | 4              | 5 |
|        | strongly disagree |   |   | strongly agree |   |
- 24.** The location should be accessible.
- 24(a).** The location is accessible.
- |        |                   |   |   |                |   |
|--------|-------------------|---|---|----------------|---|
| 24.    | 1                 | 2 | 3 | 4              | 5 |
| 24(a). | 1                 | 2 | 3 | 4              | 5 |
|        | strongly disagree |   |   | strongly agree |   |
- 25.** The charges for the services rendered should be affordable.
- 25(a).** The charges for the services rendered are affordable.
- |        |                   |   |   |                |   |
|--------|-------------------|---|---|----------------|---|
| 25.    | 1                 | 2 | 3 | 4              | 5 |
| 25(a). | 1                 | 2 | 3 | 4              | 5 |
|        | strongly disagree |   |   | strongly agree |   |
- 26.** How do you rate the overall service quality of this hospital?
- |           |      |         |      |           |
|-----------|------|---------|------|-----------|
| 1         | 2    | 3       | 4    | 5         |
| Very poor | poor | average | good | excellent |

**APPENDIX 2**

**(FACTORANALYSIS)  
TABLE (A)**

**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.853	39.411	39.411	9.853	39.411	39.411	4.389	17.555	17.555
2	2.238	8.950	48.361	2.238	8.950	48.361	3.939	15.754	33.310
3	1.368	5.474	53.835	1.368	5.474	53.835	3.463	13.851	47.161
4	1.266	5.065	58.900	1.266	5.065	58.900	2.423	9.690	56.851
5	1.112	4.449	63.349	1.112	4.449	63.349	1.624	6.498	63.349
6	.957	3.828	67.177						
7	.846	3.385	70.562						
8	.791	3.163	73.725						
9	.708	2.833	76.558						
10	.671	2.682	79.240						
11	.658	2.632	81.872						
12	.563	2.253	84.125						
13	.545	2.178	86.303						
14	.519	2.074	88.377						
15	.432	1.730	90.107						
16	.376	1.505	91.612						
17	.348	1.392	93.003						
18	.309	1.236	94.239						
19	.297	1.188	95.428						
20	.262	1.046	96.474						
21	.220	.880	97.353						
22	.196	.782	98.136						
23	.181	.725	98.861						
24	.161	.643	99.504						
25	.124	.496	100.000						

Extraction Method: Principal Component Analysis.

**KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.873
Bartlett's Test of Sphericity	Approx. Chi-Square
	1745.409
	df
	300
	Sig.
	.000

**FIGURE1**

**Scree Plot**

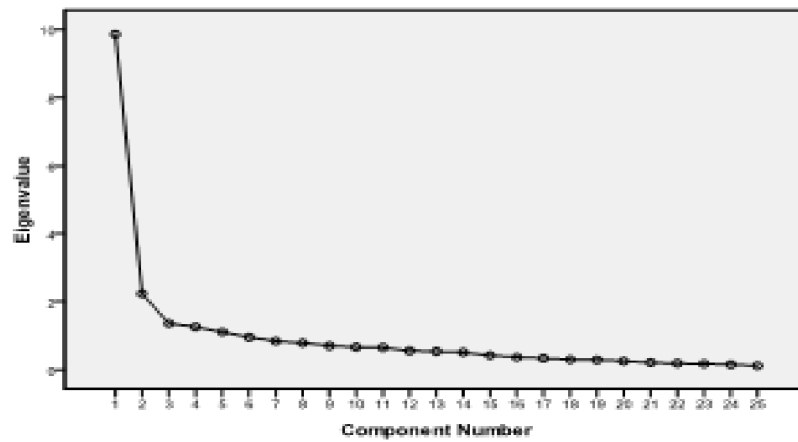


TABLE (C)

	1	2	3	4	5
up-to-date and well-maintained equipment	.774				
clean and comfortable environment with good directional signs					
doctors and staff are neat in appearance	.671				
informative brochures are available				.573	
privacy is observed during treatment		.590			
services are provided at appointed time		.684			
services are carried out right at the first time		.638			
Doctors and staff are professional and competent	.705				
system of error free and fast retrieval of documents exists	.662				
consistency of charges					.704
prompt services are given					
doctors and staff are responsive		.515			
attitude of doctors and staff instill confidence in patients		.636			
waiting time does not exceed one hour		.772			
doctors and staff are courteous and friendly			.574		
doctors possess wide spectrum of knowledge	.617				
patients are treated with dignity and respect			.623		

patients are explained their medical condition thoroughly				.792
feedback is obtained from patients				.807
services are available round the clock				
doctors and staff have patients' best interests at heart			.778	
doctors and staff understand the specific needs of patients			.803	
hospital has adequate parking facilities				
the location is accessible	.541			
charges for the services rendered are affordable				.810

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

**APPENDIX 3 (SPSS OUTPUT FOR RELIABILITY ANALYSIS)**

**Tangibility & Professionalism**

**Case Processing Summary**

		N	%
Cases	Valid	252	100.0
	Excluded <sup>a</sup>	0	.0
	Total	252	100.0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

Cronbach's Alpha	N of Items
.838	6

**Reliability & Responsiveness**

**Case Processing Summary**

		N	%
Cases	Valid	252	100.0
	Excluded <sup>a</sup>	0	.0
	Total	252	100.0

a. Listwise deletion based on all variables in the

**Reliability Statistics**

Cronbach's Alpha	N of Items
.865	4

**Empathy**

**Case Processing Summary**

		N	%
Cases	Valid	252	100.0
	Excluded <sup>a</sup>	0	.0
	Total	252	100.0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

Cronbach's Alpha	N of Items
.752	3

**Feedback & Guidance**

**Case Processing Summary**

		N	%
Cases	Valid	252	100.0
	Excluded <sup>a</sup>	0	.0
	Total	252	100.0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

Cronbach's Alpha	N of Items
.557	2

**Affordability**

**Case Processing Summary**

		N	%
Cases	Valid	252	100.0
	Excluded <sup>a</sup>	0	.0
	Total	252	100.0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

Cronbach's Alpha	N of Items
.851	6