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# Assessing the quality of healthcare services: A SERVQUAL approach

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#### ABSTRACT

Today's dynamic marketing environment encompasses a world of stiff competition and sophisticated demand, hence quality is a pre requisite for survival. In case of services, quality is an issue of prime importance and its measurement is imperative. The primary objective being to gain a competitive advantage, by improving the perceived service quality. This study primarily attempts to assess the multifarious service quality dimensions associated with healthcare services. An effort has been made for prioritizing various service-quality dimensions and further hierarchically arrange the constituents of the service quality (of services delivered) at large and identify specific areas where the gap exists so that it can be plugged. The study concludes with the recommendation of certain steps that can be implemented by managers of health care facilities in order to fulfill customer expectations, inculcate a feeling of trust in them and improve their perception of the quality of service being delivered.

#### ARTICLE HISTORY

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#### **KEYWORDS**

Healthcare services; service quality hierarchy; SERVQUAL model; service deliverables; service-gaps; analytic hierarchy process

### Introduction

In today's dynamic marketing environment, measuring the quality of service being delivered is imperative. This is a world of stiff competition and sophisticated demand, hence quality is a pre-requisite for survival. In case of services, quality is an issue of prime importance. The primary objective being to gain a competitive advantage, by improving the perceived service quality. Hence measuring service quality in service environments has captured the attention of both practicing managers and academicians. Taking a cue from the current scenario, service quality has gained traction for healthcare providers as well. This area has also piqued the interest of researchers since the quality of the service delivered would contribute to the overall success of the business. Perceived service quality in healthcare facilities needs to be high in order to ensure its sustainability and profitability. The quality of the service will directly impact satisfaction of patients (with the healthcare provider). Satisfaction in turn will impact purchase intention and customer loyalty along with repatronage. Hence the healthcare service providers strive to reduce waiting times, possess modern equipments, visually appealing facilities, and smart and polite front line staff and so on.

In a healthcare facility, the quality of service is largely defined by the interaction between patient and doctor and the frontline staff. Hence there is an enhanced focus on the people centric healthcare facilities. The quality of the service delivered may also have consequences for the doctor/patient relationship. For instance Stephen and Swartz [1] opined that satisfied patients followed the doctors' recommendations more regularly than dissatisfied ones. Also they were less likely sue healthcare facilities and doctors.

The overall attitude, skill sets, behavior and the tangibles like physical appearances and cleanliness, the manner in which front line staff communicate are considered rather important and representative of the facilities' culture and value. Some essential skill sets for a healthcare service provider are technical skills, consumer handling skills, interpersonal skills and problem solving skills. Another important aspect is the empowerment of staff and delegation of authority. Since a large number of interactions that take place in a healthcare setting are spontaneous, hence the requisite decision making authority smoothens and speeds up processes.

#### Healthcare sector in India

The Indian healthcare sector has grown by leaps and bounds, attaining the status of one of India's largest service sectors – both as per revenue as well as employment. Healthcare consists of a wide variety of facilities like hospitals, clinical trials, medical devices, outsourcing, medical tourism, telemedicine, medical equipment and health insurance. The underlying factors for the growth of the Indian healthcare sector are its strengthening coverage, services and increased expenditure by both public and private players.

The Indian healthcare system is primarily categorized into two major categories – public and private healthcare. The public component i.e. the government healthcare network comprises a defined and limited

CONTACT Masood H. Siddiqui 🐼 mhsiddiqui@gmail.com 🗈 Jaipuria Institute of Management, Lucknow, UP 226010, India © 2018 Informa UK Limited, trading as Taylor & Francis Group number of secondary and tertiary care institutions in a few cities and the focus of these facilities is on providing basic healthcare facilities through primary healthcare centers (PHCs) largely located in rural areas. The second component of the healthcare system i.e. the private sector is the provider of a large number of secondary, tertiary and quaternary healthcare facilities largely concentrated in metros, tier I and tier II cities.

The leverageable competitive advantage enjoyed by India is mainly because of a large number of trained medical and paramedical staff and professionals. India also harbors a cost advantage in comparison with other countries. For instance the cost incurring in various surgeries here is almost one-tenth of the cost incurred in the United States and European countries.

#### Market size

As per the prediction of the Indian arm of Deloitte Touche Tohmatsu, the Indian healthcare sector is expected to grow at a Compound Annual Growth Rate (CAGR) of 22.9% to US\$ 280 billion by 2020, the current size of the market is worth around US\$ 100 billion [2]. The main reason being increased digital adoption by this sector. The delivery of healthcare, which comprises hospitals, diagnostics centers, nursing homes and, pharmaceuticals, makes up 65% of the overall market. Another upcoming related sector is the Healthcare Information Technology (IT) market which is currently valued at US\$ 1 billion and is expected to grow 1.5 times by the year 2020 [2]. The Indian pharmaceutical firms are supplying more than 80% of the antiretroviral drugs that are used globally to combat AIDS (Acquired Immuno Deficiency Syndrome).

Over 70% of the country's population resides in its villages, this is bound to emerge as a potential demand source in the future. Hence healthcare services can be further expanded with a larger portion of Gross Domestic Product (GDP) spending on healthcare. There will be an additional demand of 600,000–700,000 beds in the country over a period of five to six years. This means that there exists an opportunity to invest upto a level of US\$ 25–30 billion. Hence there will be a huge demand for capital in this sector and the number of transactions will increase manifold. Private equity funds on an average have already invested US\$ 20–30 million in the healthcare chains (up from an investment of US\$ 5–15 million) [2].

Several facilities in the country also offer AYUSH (Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy) treatment. This serves as an alternative medicine and treatment for the people. As many as 3598 hospitals and 25,723 dispensaries offer this form of treatment across the country.

Another lucrative area is the Indian medical tourism industry which is currently estimated at US\$ 3 billion per annum, and the tourist arrivals pegged at 230,000. This Indian medical tourism industry is expected to grow to US\$ 6 billion by 2018. Also the number of foreigners coming to India for healthcare is expected to double over the next four years. A large number of Indian hospitals are receiving accreditation and are being recognized. Also there is increased awareness about enhancing the healthcare service quality and delivery of high quality (comparable to international standards) to the end consumer. The south Indian state of Kerala aspires to be recognized as the country's healthcare hub in five years.

#### Investments

According to data provided by the Department of Industrial Policy and Promotion (DIPP), the hospital and diagnostic centers received a Foreign Direct Investment (FDI) worth US\$ 3.59 billion during the period of April 2000 and March 2016 [2].

#### Literature review

Services are difficult to fathom and their content is complex. Their omnipresent all pervasive nature makes them difficult to comprehend. In the current global scenario, quality is the key to a firm's survival. How competitive a firm is, is determined by the quality of services provided by it [3,4]. Dinculescu [5] has drawn a distinction in quality as a consequence of features possessed by a service and quality because of lack of errors while providing the service.

Service quality caught the attention of researchers because of its obvious relationship with profitability, customer satisfaction and costs. Over a period of time researchers have evolved different ways of assessing and measuring service quality [6,7].

There is a Model of Technical and Functional Quality given by Gronroos [8]. Then there was the Servperf model propounded by Cronin and Taylor [9].

Parasuraman et al. [10], described the concept of 'service quality' as elusive and abstract. The SERVQ-UAL model is based on the assumption that a customer has certain expectations from a service provider and what he actually receives, indicates the level of quality perceived by the customer. After extensive research, they opined that there were several dimensions which impact the quality of service. Originally they had identified 10 varied dimensions of service quality, which were subsequently reduced to five broad dimensions [11]. The five broad dimensions were:

- *Tangibles* incorporating physical facilities, staff and equipment.
- *Reliability* which is the ability to deliver accurate service every time, on time at the same level of performance.
- *Responsiveness* which is the willingness to provide prompt and helpful service to the customers.

- *Assurance* is inculcating a feeling of trust and confidence in customers, as well as the efficiency and honesty of employees.
- *Empathy* incorporates the provision of individual and customized care to all customers.

SERVQUAL as a measure of service quality was developed on the expectation/ performance conceptualization. It assesses both aspects i.e. expectations harboured by a customer (from a service) and thereafter perceptions of the service performance. This method is generic in its application and has been widely applied to a vast array of service industries.

Although widely used, there have been several contrarian views on measuring service quality.

James Canman [12], for instance, questioned service-quality measurement across several service functions. He was also concerned about how expectation measurements were analyzed and the elimination of importance in the measurement of service quality. Then Babakus and Boller [13] expressed doubt on the widespread applicability of SERVQUAL across various industries and whether 'gap' score was a valid measure of service quality.

Cronin and Taylor [6] have criticized the conceptualization and operationalization of the SERVQUAL. They opined that the manner in which SERVQUAL is operationalized is more in keeping with customer satisfaction and dissatisfaction paradigm. This is of immense value to both marketers and academic researchers, since it has a bearing on the relationship between service quality, consumer satisfaction and consequentially purchase intention [14].

Another important aspect to be considered here is Customer Satisfaction, this term broadly personifies the level to which a product or service meets or exceeds the expectations of the customer [9,15]. It is the psychological evaluation of what was the customers' expectation before the purchase and their perception after using the product or service. Satisfaction is primarily a feeling of pleasure experienced by a customer because his expectations have been surpassed [16].

Also healthcare services are different from services like retail banking, restaurant and dry cleaning, which have been previously studied. Healthcare is a high involvement service, with an in depth engagement between the patient and the healthcare provider. This relationship may extend over a long period of time. Westbrook et al. [17] were of the opinion that overall customer satisfaction is the consequence of the customer's evaluation of his complete experience with the service provider. The service provider needs to focus on understanding customer expectations and strive to exceed them in order to ensure customer satisfaction.

From the perspective of the healthcare consumer, marketers generally view service quality in terms of patients' perceptions. They understand that these perceptions may be broadly construed than the service provider's perspective and take a holistic view of the complete healthcare experience. This view may even vary across public and private healthcare facilities [18,19]. This holistic view would comprise of the technical aspect of the health care, peripherals like physical facilities, touch points with the facilities' employees and other physical evidences like reading material [20,21]. Ali [22], in his study on a hospital in Pakistan, attempted to evaluate the level of healthcare service quality with a broad objective of establishing the relationship between service-quality dimensions and overall service quality in the health sector.

In the healthcare environment, the practitioner or doctor may envisage quality as the provision of requisite and technically correct medical care, which will have the desired consequences. However, an important factor to be considered here is the patients' perception and evaluation of the healthcare service provided. The doctors tend to misunderstand their patient's perception and evaluation. This lacuna in understanding may consequentially prove detrimental to the success of the healthcare facility [23].

Another noteworthy dimension is that consumers are generally reluctant to complain, in case of dissatisfaction, which in turn may lead to ill-informed service providers and delayed service recovery. This may consequentially result in dissatisfied consumers, negative word of mouth and patient churn [24,25].

This study primarily attempts to study the multifarious service-quality dimensions associated with healthcare services. An effort has been made for prioritizing various service-quality dimensions (with reference to healthcare services) and further to hierarchically arrange the constituents of the service-quality dimensions. Thereafter the study attempts to take the quality assessment further, by evaluating the extent to which healthcare services have been meeting the expectations of the customers. Gap Analysis has thus been performed to measure quality (of services delivered) at large and identify specific areas where the gap exists so that it can be plugged.

#### **Research methodology**

In the study, descriptive cross-sectional research design has been employed. A SERVQUAL scale-based questionnaire has been developed for assessing the quality dimensions in case of healthcare services. The questionnaire comprised of three sections. The first section consisted of 20 questions, representing the five preestablished service-quality dimensions drawn from the SERVQUAL model proposed by Parasuraman et al. [10,26] and comprehensively covering multifarious aspects of healthcare services (Table 1). Here the respondents were asked to allocate relative importance to the various aspects of healthcare service. These

Table 1. Service-quality dimensions for healthcare services.

Tangibility	Up to date equipment
	Employees should be well dressed and appear neat and clean
	High standards of hygiene and cleanliness
Reliability	Services are delivered as promised
	Employees are sympathetic and reassuring
	Healthcare facility is dependable
	Services are delivered at the promised time
	Records and billing are transparent and accurate
Responsiveness	Employees are always willing to help customers
	Employees are very prompt in their response
	Employees are always polite
Assurance	Customers trust the employees of the hospital
	Customers feel safe while transacting with hospital employees or Doctors
	Employees/ doctors have sound knowledge of their respective fields
	Employees / doctors get adequate support from the hospital Management
Empathy	Employees/ doctors give personal attention to customers
	Employees/ doctors understand needs of the customers
	Employees/ doctors have the customer's best interest at heart
	Service is always available according to the convenience of the Customers

questions were later used for pairwise comparison to develop Analytic Hierarchy Process (AHP) models. The second section consisted of identical twenty statements (same as section one) where customers' responses were solicited on the basis of their 'expectation' and 'perception' related to the various healthcare service-quality attributes. The third section (of the questionnaire) dealt with demographics characteristics of the respondents.

These healthcare service-quality attributes were identified by employing exploratory research design for narrowing down the problem area. All four processes used in the exploratory research design were deployed, like literature review, experience survey, focus-group interviews (participants being patients and their attendants) and depth-interviews (with doctors and other healthcare employees). Thereafter a list of 20 healthcare service-quality attributes were incorporated in the questionnaire (Table 1). A pilot survey comprising of 25 respondents was carried out.

Content Analysis of the responses was performed to identify potential errors and problems in the final questionnaire administration. Then suitable corrections/ alterations were incorporated in the final questionnaire.

Data was collected from 380 respondents, out of which 338 questionnaires were found complete in all aspects. Shopping Mall Intercept is the sampling technique that was deployed for the collection of data. The respondents were chosen (for administering the survey) from various hospitals (government and private), pathological and diagnostic centers, pharmacies and medicine stores etc. Table 2 gives a summarized description about demographic characteristics of the respondents.

Table 2.	Demographic	characteristics	of	respondents.

Variable	Category	Number	Percentage
Gender	Male	179	53.0
	Female	159	47.0
Age	Less than 25	43	12.7
-	25–35	59	17.5
	35–45	112	33.1
	45–60	63	18.6
	Greater then 60	61	18.0
Monthly family income	Less than 25 k	59	17.5
(In Rs.)	25 K–50 k	128	37.9
	50 K–75 k	72	21.3
	75 K–100 k	61	18.0
	Greater than 100 k	18	5.3
Hospital choice	Government	188	
	Private	150	
Total		338	

### Data analysis

# Prioritization of healthcare service-quality dimensions and their attributes

Here, multi-objective multi-criteria model AHP [27,28] has been deployed for prioritizing various service-quality dimensions of healthcare services and further to hierarchically arrange the constituents of the service-quality dimensions. The objective is to identify the relatively important service-quality dimensions and thereafter the actionable variables of these dimensions on which the healthcare service providers can focus with the purpose of improving them. The responses obtained by the respondents have been analyzed by AHP, by quantifying the emotions and desire for finalizing prioritizing the quality-alternatives.

The rationale of selecting AHP for prioritizing the healthcare service-dimensions is that it easily and effectively incorporates quality decision criteria. AHP employs three fundamental concepts for developing the prioritize decision model. They are 'decomposition' into constituent criteria, 'comparative analyses involving comparing the criteria on relevant and appropriate judgment-basis, and finally 'synthesizing the prioritized' decision-alternatives [27-29]. As for the purpose of applying AHP, the pairwise matrices have been developed for each of the healthcare servicedimensions. These matrices consist of constituent variables of the individual service-dimensions in rows and columns for pairwise comparison. On the basis of pairwise comparison of the variables/criteria, 'Normalize Comparison Matrices' are developed for each servicedimensions. Care must be taken to ensure that these Comparison Matrices should fulfill the desired 'Consistency Test' (having Inconsistency Indices: CR below 10%), as per Satty [28]. However, Satty [30] opined that a Consistency Ratio (CR) of 20% or less can be tolerated without loss of generality. On the basis of 'consistent comparison-matrices', 'Weight Vectors' of decision alternatives have been developed for the prioritization purpose. This process has been

Table 3. Normalize comparison matrix: Tangibility.

Panel a				
	Equipment	Hygiene	Physical	Employees
Equipment	0.1851852	0.157894737	0.29412	0.409836
Hygiene	0.7407407	0.631578947	0.35294	0.491803
Physical	0.037037	0.105263158	0.05882	0.016393
Employees	0.037037	0.105263158	0.29412	0.081967
Panel b				
Tangibility	Weights			
Equipment	0.261758			
Hygiene	0.554266			
Physical	0.054379			
Employees	0.129596			

repeated for each of the healthcare service-dimension then finally among the five service-dimensions.

### AHP analysis for service-quality dimension: Tangibility

AHP has been used to examine the relative importance of various service-quality variables under the 'tangibility' dimension [Table 3] (a) and (b). As per the AHP results (Figure 1) for the 'Tangibility' dimension, we can infer that respondents accord maximum importance (55%) to 'High standards of hygiene and cleanliness (Hygiene)' for evaluating service-quality dimension of healthcare services, followed by 'Up to date equipment (Equipment)', 26% to be precise. The physical appearance of 'employees' and 'facilities' was accorded the least importance with 13% and 5% weightage, respectively. Here, the CR is 8% which is below the acceptable level of inconsistency i.e. 10%.

### AHP analysis for service-quality dimension: Responsiveness

Here again AHP was used to prioritize various servicequality variables under the 'responsiveness' dimension [Table 4] (a) and (b). For 'Responsiveness' servicedimension, 'promptness of employees' is the most desired attribute by the respondents (weight of 56%) to decide about the responsiveness of the healthcare

Table 4. Normalize component matrix: Responsiveness.

Panel a			
	Polite	Prompt	Willing
Polite	0.125	0.2	0.05882
Prompt	0.375	0.6	0.70588
Willing	0.5	0.2	0.23529
Panel b			
Responsiveness	Weights		
Polite	0.127941176		
Prompt	0.560294118		
Willing	0.311764706		

services. 'Promptness' is followed by 'willingness to help customers' with an importance of 31%. Last but not the least 'employees are always polite' was accorded a weight of 13% (Figure 2). In this case, the CR has been determined as 9% which is below the acceptable level of inconsistency of 10%.

## AHP analysis for service-quality dimension: Assurance

Thereafter, AHP has been employed to prioritize the constituent attributes of the service-dimension 'assurance' [Table 5] (a) and (b). As per the results (Figure 3), respondents provide maximum weight to 'feel safe while transacting with hospital employees or doctors' (42%) followed by 'employees/ doctors have sound knowledge of their respective fields' (25%) and 'trust the employees of the hospital' (22%) to conceptualize the feeling of 'assurance' with the healthcare services. Last being the perception of respondents towards 'employees / doctors get adequate support from the hospital management' with a weight of 11%. Here also, the Consistency level (7%) is well below the desired level of inconsistency of 10%.

## AHP analysis for service-quality dimension: Empathy

AHP was employed to examine the hierarchy of the four quality variables of the fourth service-quality dimension 'empathy' [Table 6] (a) and (b).For



Hierarchical arrangement of Tangibility Dimension (Overall Inconsistency Index 0.08)

Figure 1. Hierarchical arrangement of tangibility dimension (overall inconsistency index 0.08).



Hierarchical arrangement of Responsiveness Dimension (Overall Inconsistency Index 0.09)

Figure 2. Hierarchical arrangement of responsiveness dimension (overall inconsistency index 0.09).

Table 5. Normalize comparison matrix: Assurance.

Panel a				
	Feel safe	Knowledgeable	Trust	Support
Feel safe	0.1576577	0.84	0.29412	0.409836
Knowledgeable	0.0225225	0.12	0.35294	0.491803
Trust	0.7882883	0.02	0.05882	0.016393
Support	0.0315315	0.02	0.29412	0.081967
Panel b				
Assurance	Weights			
Feel safe	0.425403			
Knowledgeable	0.246817			
Trust	0.220876			
Support	0.106904			

'empathy', respondents accord maximum importance to the variable 'employees/ doctors have the customer's best interest at heart' (relative importance of 46%) and then to 'employees/ doctors understand needs of the customers' with a relative importance of 30% (Figure 4). So, these two variables primarily construct the respondents' response towards evaluating 'empathy" dimension of the healthcare services. Last two service-quality variables in the hierarchy are "employees/ doctors give personal attention to customer' (weight of 13%) and 'service is always available according to the convenience of the customers' (weight of 10%). In this case, the CR has been determined as 10% which is just equal to the acceptable level of inconsistency of 10%.

### AHP analysis for service-quality dimension: Reliability

For the last healthcare service-quality dimension 'reliability', AHP was again employed to establish a hierarchy of the constituent quality variables constituting it [Table 7](a) and (b). Respondents prioritize 'services are delivered at the promised time' (weight = 37%), followed by 'healthcare facility is dependable' (weight = 28%) and 'records and billing are transparent and accurate' (weight = 20%) as essential constituents of the healthcare quality dimension 'reliability'. The last two service-quality variables 'services are delivered at the promised time' and 'employees are sympathetic and reassuring' have been accorded relatively less importance (by the respondents) with weights of 10% and 5% respectively. Here also, the CR has been determined as 10% which is just equal to the acceptable level of inconsistency of 10% (Figure 5).



Hierarchical arrangement of Accurance Dimension (Overall Inconsistency Index 0.07)

Figure 3. Hierarchical arrangement of accurance dimension (overall inconsistency index 0.07).

	Та	b	le	6.	Normaliz	e comparison	matrix:	Empathy.	
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Panel a				
	Personal attention	Understanding	Convenience	Best interest
Personal attention	0.0888889	0.037267081	0.30769	0.102564
Understanding	0.444444	0.186335404	0.46154	0.128205
Convenience	0.0222222	0.031055901	0.07692	0.25641
Best interest	0.444444	0.745341615	0.15385	0.512821
Panel b				
Empathy	Weights			
Personal attention	0.134103			
Understanding	0.305131			
Convenience	0.096653			
Best interest	0.464113			

# Hierarchical arrangement of Empathy Dimension (Overall Inconsistency Index 0.10)



Figure 4. Hierarchical arrangement of empathy dimension (overall inconsistency index 0.10).

# AHP analysis for service-quality dimensions (SERVQUAL)

Finally, an attempt has been made to create a hierarchy of the five service-quality dimensions with reference to healthcare services, as per the assessment of respondents' perception employing AHP [Table 8] (a) and (b). The results suggest that respondents perceive 'reliability" (weight = 3 3 %) as the most determining dimension while evaluating quality of healthcare services, closely followed by "assurance' (weight = 24%) and 'responsiveness' (weight = 20%). After that figure the service-quality dimension of 'tangibility' (weight = 17%) followed by 'empathy' (weight = 6%), as perceived by customers of healthcare services (Figure 6). In this case, the CR has been estimated as 13% which is well below the tolerated level of inconsistency of 20% as opined by Satty [30].

# Gap analysis of healthcare service-quality dimensions

Taking the quality assessment further, in order to evaluate the extent to which the healthcare services have been meeting the expectations of the customers or there exists some kind of a gap between what the customers expect (from healthcare services) in terms of quality and what is their perception after having received the service. Gap analysis has thus been performed. Gap analysis can also be considered as a

Tabl	le	7.	Normalize	comparison	matrix: Reli	ability.
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Panel a					
	Transparent	Dependable	Sympathetic	On time	As promised
Transparent	0.1058201	0.033613445	0.33333	0.326087	0.1459854
Dependable	0.5291005	0.168067227	0.16667	0.26087	0.1094891
Sympathetic	0.026455	0.084033613	0.08333	0.021739	0.2189781
On time	0.021164	0.042016807	0.25	0.065217	0.0875912
As promised	0.3174603	0.672268908	0.16667	0.326087	0.4379562
Panel b					
Reliability	Weights				
Transparent	0.200				
Dependable	0.281				
Sympathetic	0.054				
On time	0.095				
As promised	0.371				





Figure 5. Hierarchical arrangement of reliability dimension (overall inconsistency index 0.10).

Table 8. Normalize comparison matrix: Service-quality dimension.

Panel a					
	Reliability	Tangibility	Empathy	Responsiveness	Assurance
Reliability	0.4285714	0.473684211	0.225	0.196721	0.4026846
Tangibility	0.0714286	0.078947368	0.225	0.295082	0.0268456
Empathy	0.1428571	0.026315789	0.075	0.016393	0.4026846
Responsiveness	0.2142857	0.026315789	0.45	0.098361	0.033557
Assurance	0.1428571	0.394736842	0.025	0.393443	0.1342282
Panel b					
Service quality	Weights				
Reliability	0.330994				
Tangibility	0.167614				
Empathy	0.065142				
Responsiveness	0.197241				
Assurance	0.239009				

proxy of the level of customer satisfaction with reference to various service-quality dimensions so that remedial measures can be adopted for areas where the gaps exist.

Gap analysis has been performed for all the five service-quality dimensions (with reference to healthcare services): Tangibility, reliability, responsiveness, assurance and empathy. The summated expectation and perception scores of the five dimensions have been obtained as the weighted average of the constituent attributes/variables of each dimension. The weights (relative importance) have been obtained by the AHP analysis for each service-quality dimension.

The results revealed that for three service-quality dimensions i.e. Reliability, Responsiveness and Empathy, the gap scores were negative (all gap scores are significant with sig. <0.05) indicating that the healthcare services being delivered are falling short of the customer expectations on these quality dimensions. in case of the remaining two service-quality dimensions i.e. Tangibility and Assurance, the gap score was positive (significant with sig. <0.05) indicating that healthcare

Hierarchical arrangement of Healthcare Service Quality Dimension (Overall Inconsistency Index 0.13)



Figure 6. Hierarchical arrangement of healthcare service-quality dimension (overall inconsistency index 0.13).



Figure 7. Gap analysis of healthcare service-quality dimensions.

services were somewhat exceeding the customers' expectations with reference to the quality dimensions of Tangibility and Assurance [Tables 9](a) and (b).

These results have been further analyzed [Table 9] (a) and [Figure 7], indicating that the service-quality dimension of Reliability (-1.521) had the maximum negative gap score followed by Responsiveness (-1.160) and Empathy (-1.077). These values are indicative of the fact that healthcare services are lagging behind (on customers' expectations) with reference to all these three aspects. While the service-quality dimension of Tangibility had the maximum positive gap score (+1.133) followed by Assurance (0.950), indicating that healthcare services exceed the customers' expectations with reference to these two aspects and no apparent improvement is desired.

#### Discussions and managerial implications

AHP was deployed to create a hierarchy of the five major service-quality dimensions with reference to healthcare services. The respondents accorded the highest priority to Reliability, followed by Assurance, Responsiveness, Tangibility and then Empathy. This is indicative of the fact that from the consumers' perspective, consistent and accurate service delivery is of vital importance in case of healthcare facilities. Since these services are crucial in nature, hence consistency, accuracy and timeliness (in service delivery) are given so much weightage. In Swartz, and Stephen's [23] opinion, the doctor may believe good quality as provision of requisite and technically correct medical care, resulting in desired consequences. However, the patients' perceptions also need to be taken into

Table 9. Service-quality dimension: Paired samples statistics (gap analysis).

Panel a

		Mean	Ν	Std. deviation	Std. error mean				
Pair 1	Tangibility-perception	4.62	338	.769	.042				
	Tangibility-expectation	3.49	338	.957	.052				
Pair 2	Reliability-perception	3.29	338	1.167	.063				
	Reliability-expectation	4.81	338	1.096	.060				
Pair 3	Responsiveness-perception	3.40	338	1.035	.056				
	Responsiveness-expectation	4.56	338	.923	.050				
Pair 4	Assurance-perception	4.51	338	.902	.049				
	Assurance-expectation	3.57	338	.964	.052				
Pair 5	Empathy-perception	3.46	338	.978	.053				
	Empathy-expectation	4.54	338	.858	.047				
	Panel b								
				Paired difference	es				
					95% Cl of the di	ifference			
		Mean	Std. dev.	Std. error mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	Tangibility	1.133	1.152	.063	1.010	1.256	18.088	337	.000
Dair 3	(perception-expectation)	1 5 3 1	1 560	095	1 6 0 0	1 254	17.010	227	000
Pall 2	(perception-expectation)	-1.521	1.500	.065	-1.000	-1.554	-17.919	557	.000
Pair 3	Responsiveness	-1.160	1.360	.074	-1.305	-1.014	-15.677	337	.000
	(perception-expectation)								
Pair 4	Assurance	.950	1.250	.068	.816	1.083	13.974	337	.000
	(perception-expectation)								
Pair 5	Empathy (perception-expectation)	-1.077	1.273	.069	-1.213	941	-15.555	337	.000

account. Thereafter, a feeling of trust and confidence in the service provider is considered important along with the efficiency and honesty of doctors/employees. It is this assurance which motivates the consumer to opt for a particular healthcare service provider. Healthcare services being categorized as high involvement services, the willingness and promptness with which doctors and employees of healthcare facilities respond is perceived as important by consumers while evaluating service quality. Another important evaluation criterion in case of healthcare facilities is the tangibility element. The equipments need to be up to date, the facility should be visually appealing and high standards of cleanliness and hygiene need to be maintained since it is a healthcare facility. Other researchers [20,21] have also emphasized that a holistic view of a healthcare facility would incorporate the doctors' expertise, the tangible facilities and all the touch points wherein the consumers come in contact with the employees and other physical evidences. Last but not the least, healthcare consumers also seek individual and customized care and attention and consider it an important criterion for judging quality of the service delivered.

Thus drawing a comparison with the conclusions drawn by other researchers [20,21,23] on similar grounds, we can say that they have also emphasized on areas like technical expertise of the medical care provided as well as the humane touch. Also the tangible facilities and physical evidences are considered by the patients.

Thereafter further analyzing the dimension of Reliability (using AHP), the respondents accorded the maximum importance to the constituent variable 'service should be delivered as promised' followed by 'healthcare facility should be dependable' and 'the records and billing should be accurate and transparent'. This is indicative of the fact that healthcare customers or patients consider the reliability of healthcare services as being the most important factor constituting good quality service and this reliability is primarily defined (in customers' perceptions) by promised service delivery in a dependable manner with no errors and also transparency and accuracy in billing transactions.

The next most important service-quality dimension is Assurance. Assurance when further analyzed (using AHP) revealed that 'customers feel safe while transacting with the hospital employees or doctors' as the most vital variable followed by 'employees or doctors have sound knowledge of their field' and 'customers trust the employees and doctors'. Hence the healthcare customers or patients perceive assurance largely in terms of how secure they feel during their transactions with hospital employees or doctors, their competence and a relationship of trust with the facility's staff and doctors.

Thereafter in the service-quality hierarchy is the dimension of Responsiveness. In depth analysis of

responsiveness (using AHP) revealed that the respondents considered 'hospital employees and doctors are prompt in their response' as being the most important criterion followed by 'employees and doctor are always willing to help' and 'employees and doctors are always polite'. This is indicative of the fact that patients perceived responsiveness primarily in terms of the promptness of response received by them (at the hospital) along with a helpful attitude and polite behavior.

Tangibility was the penultimate service-quality dimension in the hierarchy. Within the domain of tangibility 'high standards of hygiene and cleanliness' was considered the most important aspect followed by 'up to date equipments' and visually appealing facilities'. This reiterates a common belief that hygiene and cleanliness are of prime importance in case of healthcare facilities and so are advanced equipments and a pleasant ambience.

Last but not the least was the dimension of Empathy in the service-quality hierarchy. Within the purview of empathy 'employees/ doctors have the customers' best interest at heart' was accorded the highest importance followed by 'employees/doctors understand the needs of the patients' and 'employees/ doctors give personal attention to customers'. This clearly leads us to infer that healthcare service being an exceptional category in terms of being sought only at the time of distress or sickness, the humane element is crucial. Quality with reference to this service is also perceived in terms of the humane touch while delivering the service. Hence the doctors and the facility's staff need to keep the best interest of the customer foremost rather than monetary considerations. Also patients and attendants demand personalized understanding (of their problems) and attention.

Taking the service-quality assessment further, gap analysis has also been performed. This analysis revealed healthcare services were not up to the mark with reference to the aspects of Reliability, Responsiveness and Empathy. Hence we can say that customers' are not perceiving healthcare services as dependable and they are not being delivered as promised with the desired transparency. Also the healthcare employees and doctors are not very willing and responsive (to aid customers), thus falling short of the customers' expectations. Healthcare customers also harbor doubts about the doctors not having the patients' best interest at heart and not understanding their needs. Some researchers [24,25] have drawn attention to the fact that consumers are generally reluctant to complain about their dissatisfaction. This will result in ultimate customer dissatisfaction, negative word of mouth and patient churn.

Thus in order to remove these service gaps, healthcare service mangers need to ensure that they inculcate a feeling of trust in the customers. This is possible only if there is consistent and dependable delivery of services and transparency in billing transactions. Also front line staff of healthcare facilities need to be appropriately trained on how to handle patients and their distraught attendants with a willingness to help and prompt responses. Since most of the healthcare facilities are highly commercial in nature, hence it is a challenge to inculcate a feeling of trust in the hearts of customers that staff and doctors of these facilities have their best interest at heart and fully understand their needs.

Hence this study not only gives a defined hierarchy of the service-quality elements for the healthcare sector but also highlights specific gap areas within these elements, so that service providers can close these gaps. There are certain recommended steps that can be implemented by managers of healthcare facilities in order to fulfill customer expectations, inculcate a feeling of trust in them and improve their perception of the quality of service being delivered.

#### Limitations and future research

In this study, descriptive cross-sectional research design has been employed to assess the quality of healthcare services. The cross-sectional design being onetime study examines study context at only one point of time. Due to consistent efforts from the government and other related agencies (private healthcare service providers, non-governmental organizations, other pressure groups, etc.), the healthcare services have become a priority area and are witnessing an ongoing but gradual change for the better. Hence, along with a cross-sectional study it would be useful to conduct a longitudinal (panel method) study to examine the changes in customer expectations and perceptions along with time so that the desired effect of reforms (that are being implemented) can be examined. Secondly, this healthcare service-quality study is limited to Indian context only and can be replicated for other developing countries; however, in case of developed economies the situation should be examined to compare the existing differences.

#### **Disclosure statement**

No potential conflict of interest was reported by the authors.

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