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Article

Assessment of healthcare service quality effect on patient satisfaction and care outcomes: A case study in India

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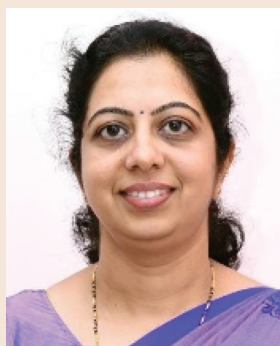
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MANAGEMENT | RESEARCH ARTICLE

Assessment of healthcare service quality effect on patient satisfaction and care outcomes: A case study in India

Swathi K S^{1*}, Gopalkrishna Barkur² and Somu G³

Abstract: Patient-centered care has become a key driver in recent healthcare reform. Meanwhile, healthcare consumers have become more aware and concerned about the quality of services. This has made healthcare organisations accentuate evaluating healthcare service quality and patient satisfaction. This paper aims to assess the dimensions of the patient-perceived healthcare service quality and its effect on patient satisfaction and care outcomes. A total of 1169 responses were collected from patients of 10 hospitals in India using a pre-validated structured questionnaire. Our study has identified five primary dimensions of healthcare service quality such as quality of clinical services, diagnostic services, administrative services, supportive services, coordination among healthcare professionals, and integration of patients in healthcare decisions. The result also reveals the mediation effect of patient satisfaction on the relationship between healthcare service quality and care outcomes. This research immensely contributes to the body of knowledge in the area of healthcare service quality. The study findings will benefit healthcare administrators to devise effective and valuable strategies to deliver superior quality healthcare services to their patients. Furthermore, this research has presented



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Somu G, currently a Professor, Dept. of Hospital Administration KMC Manipal, has worked in various capacities and positions, including head of department, Hospital administration, and coordinator of the MHA program under MAHE. He is an MBBS graduate and holds MD in Hospital Administration. He was involved in implementing ISO 9001:2004 for QMS in the hospital and even ISO 14001:2008 for EMS. He has been involved as a member of the Ethics committee and NABH implementation. Other positions include Chairman Disaster Management Committee, Member of the Ethics Committee/Radiation Safety Committee/Safety & sentinel Committee/Quality improvement committee at Kasturba Hospital Manipal. Dr. Somu is keenly interested in subjects like Quality Management and public health.

a clear understanding of the direct and indirect effect of healthcare service quality dimensions on patient satisfaction, which is essential for hospital administrators and marketing managers to take suitable actions for improving patient satisfaction and care outcomes.

Subjects: Health & Development; Business, Management and Accounting; Public Health Policy and Practice

Keywords: healthcare service; healthcare quality; patient satisfaction; care outcomes; hierarchical component model

1. Introduction

The healthcare sector is one of the largest service economies in India (Kondasani & Panda, 2015; Sarwal et al., 2021, p. 2). The growing competition in the healthcare industry and the change in people's living standards have resulted in an increased emphasis on the quality of healthcare services. The provision of quality healthcare services has become a key concern for patients. Similarly, the delivery of superior quality services to their patients has become critical for healthcare providers (Al Owad et al., 2022; Fatima et al., 2018; Jandavath & Byram, 2016; Nguyen et al., 2021; Padma et al., 2010). There is a risk of losing patients to hospitals that fail to realise the significance of providing quality healthcare services and ensuring patient satisfaction (Ampaw et al., 2020; Habibi & Rasoolimanesh, 2021; Padma et al., 2010). In other words, establishing a superior quality service leads to higher patient satisfaction (Afrashtehfar et al., 2020; Jandavath & Byram, 2016). People are more informed, opting for new approaches to avail healthcare services, and are keen to take care of one's health. Moreover, patients have become more aware of the quality of services delivered by healthcare organisations (Cruz & Mendes, 2019; Zineldin, 2006). Hence, healthcare consumers have higher expectations and demand for quality services. Patient satisfaction is a key factor in building and maintaining relationships in healthcare organisations (Aagja & Garg, 2010; Al Owad et al., 2022; Ampaw et al., 2020). Besides, patient care outcomes are vital for learning about the effectiveness and quality of care provided (Cruz & Mendes, 2019; Liu et al., 2014). Further, Harris (1991) defined outcomes as the endpoints of care that refer to the substantial changes in the health condition and behaviour of the patients caused by the healthcare intervention. As a result, healthcare organisations are striving to devise profound patient-oriented quality assessment measures (Afrashtehfar et al., 2020). Though many valid and established instruments are available, several providers have failed to align those to the complexities of the healthcare settings (Al Owad et al., 2022; Dagger et al., 2007; Nguyen et al., 2021). Therefore, this study explores the various dimensions of healthcare service quality (HSQ) and investigates its effect on patient satisfaction (PTS) and care outcomes (COUT). The study would facilitate the hospitals to have a better insight into patient-perceived HSQ dimensions and their effect on PTS and care outcomes to develop and sustain relationships with their patients for a longer duration.

2. Literature review

Ensuring the provision of quality service is one of the essential areas in the healthcare industry. Healthcare administrators face the critical challenge of sustaining and improving the quality of service without increasing costs. The definition, assessment, and improvement of healthcare service quality have been the primary concerns of healthcare managers (Coccia, 2019; Coccia & Igor, 2018). While curtailing the costs, healthcare organisations strive to achieve their goals without compromising quality. Though a substantial number of studies have been published on healthcare service quality, a few have contributed to the development and validation of context-specific healthcare quality models (Dagger et al., 2007). Hence, the following critical concerns linked to HSQ, PTS, and COUT assessment are discussed.

Service quality is defined as a consumer's experience or impression regarding an organization's overall excellence (Cronin & Taylor, 1992; Parasuraman et al., 1988). It considers the gap between expected and perceived services (Parasuraman et al., 1988). This decision is commonly explained

regarding the difference between customers' expectations of service and actual service performance (Dagger et al., 2007). Further, Gronroos (1984) highlighted the use of expectations as a level of reference for judgment of the execution of service. However, some researchers emphasised performance-only measures for developing service quality models (Brady & Cronin, 2001; Cronin & Taylor, 1992). However, service quality is defined at an abstract level, usually specified as a second-order factor (Gronroos, 1984; Parasuraman et al., 1988). However, in recent times, service quality has been explained as a third-order factor (Brady & Cronin, 2001; Dagger et al., 2007). These explanations advise us that service quality involves many primary dimensions that represent a common construct of service quality at a higher level. Furthermore, these dimensions have sub-dimensions that unite interrelated elements into subgroups. Therefore, overall service quality perceptions are denoted as a third-order factor to the sub-dimensions (Dagger et al., 2007).

Even after the advent of the SERVQUAL scale (Parasuraman et al., 1985, 1988), researchers have continued to study and examine service quality constructs, and they are still an important topic unanswered (Itumalla et al., 2014). Researchers using the SERVQUAL model in different service contexts have identified a range of factors that differ across the service contexts. For example, three factors are identified in the automobile service context (Bouman & van der Wiele, 1992), four factors in the retail clothing (Gagliano & Hathcote, 1994), five factors supporting the original in healthcare (Rohini & Mahadevappa, 2006; Wisniewski & Wisniewski, 2005), six dimensions in primary care clinic (Headley & Miller, 1993), seven dimensions in among the patients in a fertility clinic (Lytle & Mokwa, 1992) and nine dimensions in a multispecialty hospital (Carman, 1990). A study conducted in Saudi Arabia revealed the significant influence of tangibility and empathy, the average influence of reliability and safety, and the minor effect of responsiveness on HSQ and PTS (Kilase AJOUUD & Jouili, 2021). The application of the SERVQUAL model in healthcare services has produced mixed results. Hence, the SERVQUAL scale has been criticised as the five dimensions of the model, such as "reliability, empathy, tangibility, responsiveness, and assurance," are hard to replicate across different service environments (Buttle, 1996). The mixed results of service quality studies and the failed efforts to repeat service quality dimensions reveal the complexity of service quality assessment.

Further, the researchers have suggested formative constructs approach for appropriately conceptualising service quality (Dabholkar et al., 2000; Parasuraman et al., 2005; Rossiter, 2002). If the dimensions of the construct ultimately determine the overall construct, then it is deemed as formative construct. In the reflective approach, the dimensions are considered as the reflective indicators of their higher-order construct (Dagger et al., 2007; Jarvis et al., 2003). Hence, this study believes that as the technical service quality improves, the overall HSQ perceptions also improve.

There is ample evidence of using several conceptual models to assess the quality of healthcare services. Doanbedian (1980) distinguished two core domains of healthcare quality: Technical care and interpersonal practices. Here, technical care implies medical diagnosis and procedures, while interpersonal care processes refer to how health care services are provided to the patients (Doanbedian, 1980). Ware et al. (1983) recognised the care environment as an important dimension of patient satisfaction in addition to the technical quality of care and provider-patient interaction. Similarly, technical competencies and interpersonal skills are also considered important factors when assessing healthcare services. Further, Zineldin (2006) expanded these conceptualisations and identified "quality of the object, quality of processes, quality of infrastructure, quality of interaction, and quality atmosphere" as the five dimensions of healthcare quality. A study by Laroche et al. (2005) recognized a four-factor framework that includes "physician concern, staff concern, the convenience of care processes, and tangibles" (Choi et al., 2005). Another study on healthcare service quality identified seven dimensions such as "infrastructure, personnel quality, clinical care processes, administrative processes, safety indicators, the overall experience of medical care, and social responsibility" (Amin & Nasharuddin, 2013). It also stated that all these dimensions were the major predictors of patient satisfaction. The PubHosQual framework identified five dimensions such as "admission, medical service, overall service,

discharge process, and social responsibility” in the context of the assessment of HSQ in public hospitals (Aagja & Garg, 2010; Amin & Nasharuddin, 2013). A study on patient-perceived dimensions of total quality of healthcare services has identified seven factors such as “infrastructure, personnel quality, the process of clinical care, administrative procedures, safety indicators, social responsibility and overall experience of medical care received (Duggirala et al., 2008). Another study on patient satisfaction and loyalty has recognised eight elements of healthcare service quality, such as “tangibles, reliability, responsiveness, assurance, empathy, discharge, safety measures, and medicine quality management” (Murti et al., 2013). Further, Itumalla et al. (2014) developed an instrument called HospitalQual to measure hospital service quality from the inpatients’ perspective in the Indian context. The study recognised seven dimensions, namely “medical service, nursing service, administrative service, patient safety, patient communication, and hospital infrastructure.” Healthcare service quality developed by Sumaedi et al. (2016) revealed three key factors such as “healthcare service outcome, healthcare service interaction, and healthcare service environment.” Further, the primary dimensions in this multi-level model involved eight sub-dimensions. A survey on hospital service quality, patient satisfaction, and loyalty conducted in Pakistan identified five dimensions of healthcare quality, namely “physical environment, customer-friendly environment, communication, privacy & safety, and responsiveness as antecedents to patient loyalty” (Fatima et al., 2018).

3. Theoretical framework

A comparison of healthcare service quality dimensions from the extensive literature indicates a considerable overlap of dimensions. The prominent dimensions of healthcare quality comprise clinical services (CLS), diagnostics services (DGS), administrative services (ADS), supportive services (SPS), and coordination and integration (CIT). Each dimension further has sub-dimensions that reflect the quality of healthcare services (HSQ). The construct CLS includes the subdimensions such as attributes related to doctors’ care, nurses’ care, medication management, and pain management revealing significant effect of these dimensions on perception of overall HSQ (Abbasi-Moghaddam et al., 2019; Itumalla et al., 2014, Mohamed & Azizan, 2015; Padma et al., 2010; Rohini & Mahadevappa, 2006; Swain & Kar, 2018; Upadhyai et al., 2019). Prior research on healthcare service quality perception revealed the effect of the availability of testing and therapeutic equipment enlisted under the “tangibles” dimension on overall service quality perception (Padma et al., 2010; Kansra & Jha, 2016; Zarei et al., 2012). The availability of medical equipment, facilities of laboratory and radiological diagnosis tests under the “infrastructure” dimension showed a significant association with overall quality perception (Duggirala et al., 2008; Itumalla et al., 2014; Kansra & Jha, 2016; Kondasani & Panda, 2015, Mohamed & Azizan, 2014; Swain & Kar, 2018). Hence, the construct DGS includes laboratory and radiodiagnosis services as its subdimensions. Administrative services are vital to delivering and consuming core services (Badri et al., 2009; Gronroos, 1984). Literature on healthcare service quality recognized the effect of admission procedure (Aagja & Garg, 2010; Amin & Nasharuddin, 2013, D’ Souza & Sequeira, 2012; Itumalla et al., 2014; Makeram & Al-Amin, 2014; Swain & Kar, 2018), ease of getting appointments, hassle-free admission (Abbasi-Moghaddam et al., 2019; Padma et al., 2010) on perception of quality of admission process. Similarly, the literature evidence supports the effects of discharge procedure on the perception of overall service quality (Aagja & Garg, 2010; Amin & Nasharuddin, 2013; Itumalla et al., 2014; Makeram & Al-Amin, 2014; Swain & Kar, 2018). Hence, the construct ADS consists of two sub-dimensions, such as the admission and discharge process. The major attributes conceptualized under the supportive service construct include food quality, cleanliness, and safety and security of patients (Zineldin, 2006; Zineldin et al., 2011). Further, researchers specified the effect of a hygienic environment, quality food, and ensuring the safety and security of patients during their hospital stay, as these factors have a significant influence on the perception of overall service quality (Swain & Kar, 2018). Thus, the SPS construct consists of these three sub-dimensions. Coordination among healthcare professionals and integration of patients is vital to ensure the involvement of all the stakeholders in the service delivery process. Prior research on HSQ revealed a significant association between the quality of interaction or communication between healthcare professionals and patients and overall HSQ (Itumalla et al., 2014; Zineldin, 2006). Indeed,

involvement and information sharing, and information provision to patients on their health status, treatment planning, and care delivery significantly affect the healing process (Badri et al., 2007; Abbasi-Moghaddam et al., 2019). Moreover, patients can seek full information about their health/illness status and care process. Hence, the construct CIT consists of coordination and integration as two sub-dimensions.

Thus, based on the above literature support, the study considers perceptions of overall health-care service quality as the third-order factor. Hence, we propose the following hypotheses:

H_{1a}: Clinical Services (HSQ) has a positive and significant effect on patient satisfaction.

H_{1b}: Diagnostic Services (HSQ) has a positive and significant effect on patient satisfaction.

H_{1c}: Administrative Services (HSQ) has a positive and significant effect on patient satisfaction.

H_{1d}: Supportive Services (HSQ) has a positive and significant effect on patient satisfaction.

H_{1e}: Coordination and Integration (HSQ) has a positive and significant effect on patient satisfaction.

The delivery of superior quality healthcare services allows hospital managers to distinguish the healthcare facility and enhance their competitive advantage (Olorunniwo et al., 2006). Healthcare providers consider patients as their essential capital. Hence, ensuring the quality of healthcare services has become more critical in satisfying and sustaining patients for the long term (Alhashem et al., 2011; Arasli et al., 2008). The existing literature has validated the direct association between perceived HSQ and PTS (Bakan et al., 2014; Fatima et al., 2018; Mohaned & Azizan; Mohamed & Azizan, 2015; Singh & Dixit, 2020). PTS is extensively used to determine healthcare quality, and researchers demonstrated a positive relationship between HSQ and PTS (Al Owad et al., 2022; Ampaw et al., 2020; Shabbir et al., 2016). Hence, we postulate the following hypothesis:

H₂: Overall HSQ has a positive and significant effect on patient satisfaction.

Literature evidence clarifies that satisfaction can have a direct impact on consumer loyalty (Cronin et al., 2000), which is deemed as an outcome of service quality (Duggirala et al., 2008). A patient's willingness to revisit the hospital and recommend it to others is considered as behavioural intention (Chahal & Mehta, 2013). Loyalty and behavioural intentions are considered as the outcomes of care delivered. In addition, Harris (1991) refers to care outcomes as the changes in patient's health status and behaviour after the healthcare encounter. Improvement in the health status makes the patients satisfied with the care and revisit the hospital for subsequent healthcare encounters. Satisfied healthcare consumers recommend the hospital to their friends, neighbors, and family members and influence them when they choose hospitals (Amin & Nasharuddin, 2013). Thus, the authors consider the change in health status, loyalty, and behavioural intentions as the outcomes of care delivered and posit the subsequent hypotheses:

H₃: Overall HSQ has a positive and significant effect on care outcomes.

The literature on customer satisfaction determinants states that service cost significantly influences satisfaction levels, and patients have become more cost-sensitive (Andaleeb, 1998; Naidu, 2009). Further, Swain and Kar (2018) recognised the effect of billing and the price of services on patient

satisfaction and behavioural intentions. Consequently, the construct “treatment cost” (TC) was included with the four items that measured the perception of patients on billing services and the cost of treatment. Thus, we postulate the ensuing hypotheses:

H₄: The cost of healthcare services has a significant effect on patient satisfaction.

H₅: The cost of healthcare services has a significant effect on care outcomes.

Previous research on service quality confirmed the mediation role of customer satisfaction in the relationship between service quality and behavioural intentions (Tarn, 1999). Further, the health-care quality literature also identified the mediation role of PTS in the relationship between perceived service quality and behavioural compliance (Mohamed & Azizan, 2015; Papanikolaou & Ntani, 2008). Hence, we assumed the notion that the PTS would mediate the relationship between HSQ and COUT and developed the following hypothesis.

H₆: Patient satisfaction has a mediation effect on the relationship between the overall HSQ and care outcomes.

Many studies have emphasised that service quality is “an attitude based on reflective judgment” and that healthcare quality indicators are formative in nature (Giovanis et al., 2018). If the constructs the researcher wants to study are complex, then they could be operationalised at a higher level of extraction. Higher-order or hierarchical component models (HCMs) usually comprise testing second-order constructs that include two-layer components. The higher-order model includes summarizing the lower-order constructs into a single multidimensional higher-order construct. Thus, such a modeling method leads to greater parsimony and lowers the complexity of the model (Hair et al., 2016). HCMs have two levels of components, namely the higher-order component (HOC) and the lower-order component (LOC). HOC captures the more abstract higher-order construct, and the LOC captures the sub-dimensions of the higher-order construct. The reflective-formative HCM approach implies a formative relationship between the LOCs and HOCs, and all the first-order constructs are measured using reflective indicators (Hair et al., 2016).

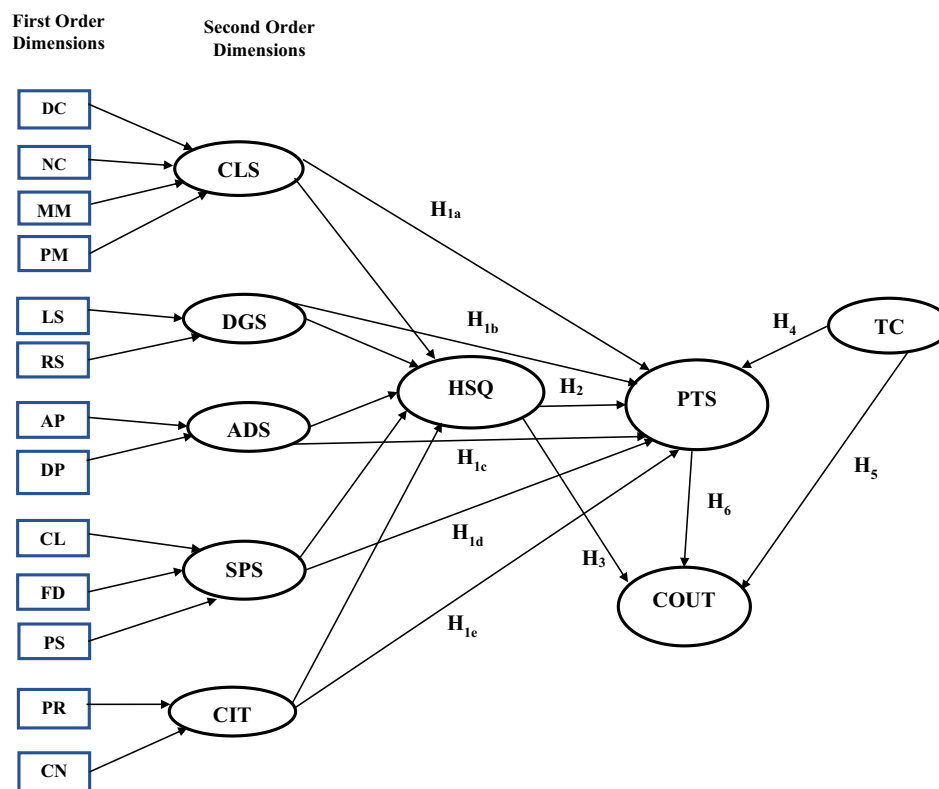
Previous studies have considered service quality perceptions as consumers’ reflective judgment (Barclay et al., 1995). Meanwhile, the literature states that service quality is more suitably demonstrated as a formative construct (Dabholkar et al., 2000; Dagger et al., 2007). Hence, based on the decision criteria stated by Jarvis et al. (2003), we have considered HSQ as a formative construct and the measurement items as reflective scales. Thus, we have used the reflective-formative hierarchical model in this study. Figure [Figure 1](#) explains the conceptual framework of the study.

4. Methodology

This exploratory study embraced a cross-sectional approach. The study population comprised the inpatients of private multi-specialty hospitals in Karnataka. Ten hospitals were chosen from three cities of Karnataka, namely Bengaluru, Mysore, and Mangaluru, based on their size and type of services provided. Hospitals were selected based on purposive sampling techniques based on their size and provision of multi-specialty services. To evade selection bias, the occupancy percentage of the hospital is also considered. The hospitals with more than 250 beds and 60% occupancy were approached. The required permission from hospital administration and ethics committee approvals were obtained in the selected hospitals.

The sample size was calculated based on the ten times rule, which states that the total sample should be ten times the total items used in the study instrument (Barclay et al., 1995). The ten times rule asserts that the minimum sample for PLS-SEM should be ten times larger than the total

Figure 1. Theoretical framework.



number of indicators (Giovannis et al., 2018). Accordingly, 820 responses were supposed to be included in the study. Considering the above rule, the researchers tried gathering the maximum sample. The hard copies of the research questionnaire were administered to the patients who met the inclusion criteria in the selected hospitals. The data collection period was for six months. A total of 1300 questionnaires were issued to the patients of the chosen hospitals and could collect back 1232 responses. Out of these, the researchers could use 1169 completed questionnaires for the final data analysis. The inclusion criteria for respondents' selection are the inpatients who have stayed in hospitals for more than 48 hours and about to get discharged and received "may be discharged" orders from treating doctors are considered as respondents. Paediatric and psychiatric patients were excluded from the study, considering their inability to perceive and analyse their experiences during the hospital stay.

As the lower-order constructs are reflectively measured constructs that do not share a common cause but form a general concept that influences the endogenous variable, this study employs the reflective-formative type of Hierarchical Component Model (HCM) for analysis (Becker et al., 2012). Accordingly, it was decided to use the PLS-SEM approach for specification, measurement of the model, and testing of the hypotheses.

A questionnaire was designed considering the items used by the previous studies for measuring perceived healthcare service quality. A pilot study was conducted comprising 110 responses from patients of two multi-specialty hospitals to verify whether the respondents could comprehend the items of the survey instrument and to facilitate the item reduction required, if any. All the constructs included in the study were drawn from previous literature. Though the scales used in the study were previously reported in the literature, the scale validation procedure was performed using internal consistency reliability and outer loadings. The final survey instrument contained a total of 81 items under the five dimensions, namely clinical services (CLS), diagnostic services (DGS), administrative services (ADS), supportive services (SPS), and coordination and integration (CIT). The clinical service

construct had further sub-constructs, such as doctors' care, nurses' care, pain management, and medication management. The diagnostic service construct had two sub-dimensions, namely laboratory service and radiology services. The admission process, discharge, and billing process are the sub-dimensions of the administrative service construct. The supportive service construct has food quality, cleanliness, and safety services as the sub-dimensions. The fifth construct, coordination and integration has two sub-dimensions, namely patient rights and coordination. Thus, the model has 13 first-order constructs and five higher-order constructs. Scales from previous research were employed as the source of measures for assessing overall HSQ, patient satisfaction (PTS), and care outcomes (COUT). The overall HSQ included five items as a patient's feeling on the hospital's overall performance quality. Patient satisfaction was assessed using 12 items derived from the literature. In addition, the construct treatment cost (TC) comprised four measurement items. Care outcomes were measured using three items that reflect the change in consumers' health status and behavior after experiencing a healthcare encounter. A five-point Likert scale was used for capturing the responses.

5. Results

The Partial Least Square-Structural Equation Modelling (PLS-SEM) was used for data analysis. The data were analysed based on a two-step SEM approach. In the first step, we examined the adequacy of the hypothesised model based on the reliability and validity criteria. Secondly, the structural model is analysed to assess the strength and direction of the relationship among the theoretical constructs (Barclay et al., 1995).

5.1. Demographic details

The details of the demographic information of the respondents are given in Table 1. The sample population comprised 52.53 percent of males and 47.47 percent of females. Age-wise distribution of the sampled respondents shows that 25.9 percent of respondents are between the 18–30 years of age group, 34.5 percent of respondents are from the 31 to 50 years of age group, 29.6 percent of respondents are in the 51–70 years of age group and 10 percent of respondents are greater than 70 years of age group.

Among the education level category, 23.7 percent of respondents are below the 10th standard, 38.1 percent of respondents have an education ranging from 10th standard to 12th standard, 28.5 percent of them are graduates, and 9.8 percent of them are qualified postgraduate and above.

The most significant percentage of respondents, that is, 37.0 percent of them, fall into the category with an annual income of Rs.2–5 lakhs, 31.1 percent of them are in the category of Rs. 5 to 10 lakhs of annual income, 18.5 percent of the respondents have an annual income less than Rs. 2 lakhs, and 13.4 percent of them have an annual income more than Rs. 10 lakhs.

As per the health insurance status details of respondents, 29.7 percent of respondents had individual or family health insurance schemes, 38.8 percent of respondents were enrolled for government health schemes, 18.3 percent of respondents had corporate insurance schemes, and 13.21 percent of respondents were uninsured.

Among the respondents, 59.88 percent of them had visited the hospitals for the first time, and 40.12 of them were "repeat patients" of the hospitals. Among the respondents, 39.78 percent were from urban areas, 36.70 percent were from semi-urban areas, and 23.52 of them were from rural villages. Considering the length of stay of the respondents, 42.9 percent of them have stayed for up to 7 days, 35.8 percent of them from 8 to 15 days, and 21.2 percent of them stayed more than 15 days in the hospital.

5.2. Reliability and validity assessment

We have measured Cronbach's alpha, composite reliability, individual indicator reliability, and average variance extracted (AVE) to assess the construct reliability and validity of the measurement model. The results of reliability and convergent validity are shown in Table 2. The Cronbach

Table 1. Demographic profile of respondents

Characteristics		No. (N)	%
Gender	Male	614	52.53
	Female	555	47.47
Age	18–30 years	303	25.9
	31–50 years	403	34.5
	51–70 years	346	29.6
	71 years and above	117	10.0
Education levels	Below 10 th Standard	277	23.7
	10 th to 12 th Standard	445	38.1
	Graduate	333	28.5
	Postgraduate and above	114	9.8
Annual family income	Below 2 lakhs	216	18.5
	2–5 lakhs	432	37.0
	5–10 lakhs	364	31.1
	Above 10 lakhs	157	13.4
Health insurance status	Individual/Family Insurance	347	29.7
	Corporate insurance	214	18.3
	Government schemes	454	38.8
	Non-insured	154	13.21
Type of visit	First Visit	700	59.88
	Repeat visit	469	40.12
Home location	Rural	275	23.52
	Semi-urban	429	36.70
	Urban	465	39.78
Length of stay	1–7 days	502	42.9
	8–15 days	419	35.8
	Above 15 days	248	21.2

alpha values of all the model constructs are greater than 0.7, the composite reliability values are greater than 0.8, and the AVE values are greater than the threshold value of 0.5. The item-wise reliability test values are given in Table A1 of the annexure. Thus, it implies that the constructs used in this study have good reliability and validity.

In addition, we have also used the Fornell-Larcker criterion (given in Table A2 in the annexure) and Heterotrait-Monotrait (HTMT) Ratio (given in Table A3 in the annexure) to assess the discriminant validity before analysing the structural equation modeling. The results of the Fornell-Larcker criteria for the discriminant validity in Table A2 demonstrate the square root of every construct exceeding its correlations with the other construct. Therefore, it is evident from the result that discriminant validity exists among the constructs used for the study. Further, the values of the HTMT ratio for all the constructs are below the threshold value of 0.90. The collinearity issues among the indicators of formative constructs are assessed considering the variance inflation factor (VIF) (Hair et al., 2016). The VIF values of formative indicators are well within the threshold value of 5 (Table A4 in the annexure), which indicates no multi-collinearity issues and confirms a good formative measurement model (Hair et al., 2016). Hence, the data fulfills all the reliability and validity criteria required for model assessment.

Table 2. Reliability test values

Constructs	Cronbach's Alpha	Composite Reliability	AVE
ADS	0.702	0.833	Formative
AP	0.856	0.913	0.777
CIT	0.806	0.886	Formative
CL	0.938	0.960	0.889
CLS	0.922	0.938	Formative
CN	0.891	0.932	0.820
COUT	0.925	0.953	Formative
DC	0.891	0.917	0.649
DGS	0.802	0.910	Formative
DP	0.861	0.915	0.765
FD	0.789	0.886	0.716
HSQ	0.943	0.956	Formative
LS	0.819	0.917	0.847
MM	0.865	0.918	0.789
NC	0.933	0.946	0.714
PM	0.902	0.931	0.772
PR	0.763	0.863	0.689
PS	0.865	0.908	0.825
PTS	0.920	0.936	Formative
RS	0.857	0.913	0.777
SPS	0.774	0.870	Formative
TC	0.915	0.940	0.798

Further, the model fit indices of the measurement model are assessed as given in Table 3. The standardised root means square residual (SRMR) value is 0.054 for the saturated model. The SRMR value less than 0.08 and normed fit index (NFI) value closer to 1 indicates a good model fit. However, the widely recommended threshold of NFI value of 0.9 and above suggests a good model fit (Dash & Paul, 2021). Further, the literature advises considering the value of RMS Theta (root mean square residual covariance) as a measure of model fit, and the values below 0.12 indicate a well-fitting model (Hair et al., 2011, 2021, p. 189). The NFI value of the model is 0.915, and the value of RMS Theta is 0.102, which indicates the suitability of the measurement model.

5.3. Structural model

After determining an acceptable measurement model, it is considered rational to analyse the structural model to assess the hypothesised relationships. The results of the second-order dimensions are mentioned in Table 4. The first-order dimensions of all four constructs have a significant effect on CLS as the t-values are greater than 1.964 and the p-values are less than 0.05. Similarly, the first-order dimensions of DGS, ADS, SPS, and CIT have significant effects. These results confirm the second-level higher-order dimensions of CLS, DGS, ADS, SPS, and CIT, and HSQ at the third level.

The conceptual model in Figure 2 depicts the path coefficients that explain the strength of relationships between exogenous and endogenous variables, and the coefficient of determination, R^2 values of CLS, DGS, ADS, SPS, and CIT. The R^2 value of patient satisfaction explains a 72.9 percent variance. The literature states that R^2 values of 0.25, 0.50, and 0.75 for endogenous latent variables are deemed weak, moderate, and substantial (Becker et al., 2012; Collier & Bienstock, 2006). The R^2 value of HSQ is 0.549, which implies reasonably moderate predictive power of the model. However, the coefficient of determination stands moderately high for PTS and COUT with the R^2 value of 0.721 and 0.606, respectively, which denote the predictive validity of the

Table 3. Model fit indices

Indices	Saturated Model	Estimated Model
SRMR	0.054	0.072
d_ ULS	10.011	20.853
d_ G	3.690	4.183
Chi-Square	23946.614	25221.383
NFI	0.915	0.908
RMS Theta	0.102	

SRMR- standardized root means square residual; d_ ULS- squared Euclidean distance; d_ G- geodesic distance; NFI- normed fit index; RMS Theta- root mean squared theta

Table 4. Results of the second-order dimensions

First-order dimensions	Path coefficients
DC→CLS	0.177***
NC→CLS	0.244***
MM→CLS	0.268***
PM→CLS	0.275***
LS→DGS	0.457***
RS→DGS	0.459***
AP→ADS	0.547***
DP→ADS	0.310***
FD→SPS	0.350***
CL→SPS	0.484***
PS→SPS	0.238***
PR→CIT	0.193***
CN→CIT	0.754***
CLS→HSQ	0.090*
DGS→HSQ	0.092**
ADS→HSQ	0.102**
SPS→HSQ	0.362***
CIT→HSQ	0.196***

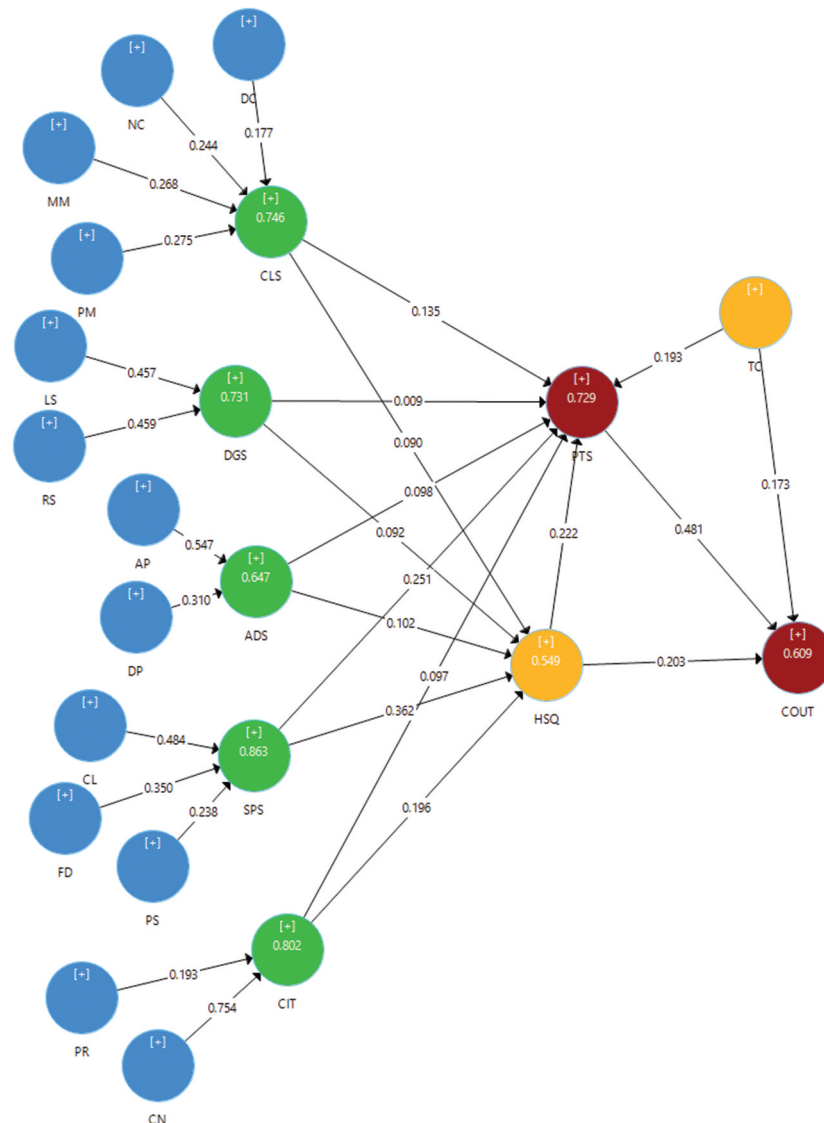
DC-Doctors care; NC-Nurses care; MM- Medication Management.; PM-Pain Management; LS-Laboratory services; RS- Radiology services; AP-Admission Process; DP-Discharge Process; CL-Cleanliness; FD-Food; PS-Patient Safety; PR- Patient Rights; CN-Coordination; CLS-Clinical services; DGS-Diagnostic Services; ADS-Administrative services; SPS-Supportive services; CIT-Coordination and Integration; TC-Treatment Cost; HSQ-Healthcare service quality; PTS- Patient Satisfaction; COUT-Care outcomes

*** = p-value 0.001; **=0.01; *=0.05

structural model. The R^2 values of second-order dimensions CLS, DGS, ADS, SPS, and CIT are 0.746, 0.731, 0.647, 0.863, and 0.802, respectively, which implies moderately high predictive power of the model.

DC-Doctors care; NC-Nurses care; MM- Medication Management.; PM-Pain Management; LS- Laboratory services; RS-Radiology services; AP-Admission Process; DP-Discharge Process; CL- Cleanliness; FD-Food; PS-Patient Safety; PR-Patient Rights; CN-Coordination; CLS-Clinical services; DGS-Diagnostic Services; ADS-Administrative services; SPS-Supportive services; CIT-Coordination and Integration; TC-Treatment Cost; HSQ-Healthcare service quality; PTS-Patient Satisfaction; COUT-Care outcomes

Figure 2. Results of structural model.



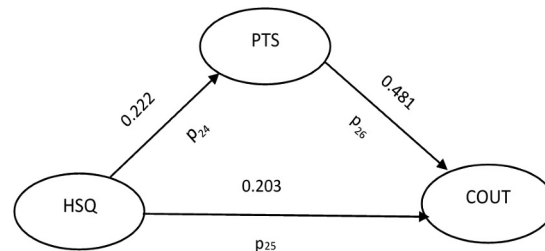
The path coefficients of the mediator model that shows the mediating effect of patient satisfaction in the relationship between healthcare service quality and care outcomes are shown in Figure 3. The path coefficient value of the direct effect of HSQ on care outcomes is 0.203(p₂₅).

The indirect effect is calculated by finding out the product of path coefficients of the relationships between HSQ and PTS (p₂₄) and between patient satisfaction and care outcomes (p₂₆). Accordingly, the indirect effect is calculated, which is 0.1068. Variance accounted for (VAF) is calculated to determine the strength of the mediation effect using equation (1), and the value is 0.3447.

$$VAF = \frac{\text{Indirect effect}}{\text{Indirect effect} + \text{Direct effect}} \quad (1)$$

A VAF value greater than 80% denotes full mediation, a VAF value of between 20% and 80% indicates partial mediation, while a value below 20% implies no mediation [53, 54]. As the variance accounted for (VAF) is above 0.20 but below 0.80, the same can be interpreted to conclude that

Figure 3. Path coefficients of the mediator model; patient satisfaction being the mediator.



patient satisfaction exerts a partial mediating effect in the relationship between healthcare service quality and care outcomes. As the indirect effect and direct effect are both significant and in a positive direction, we determine that patient satisfaction has a complementary mediation in the relationship between HSQ and care outcomes.

The t-values and p-values are examined to evaluate the statistical significance of the parameter estimates from the structural equation modeling. The relationship between the exogenous and endogenous variables is significant as the t-values are greater than 1.964 at a significance level of 0.05, except for the relationship between the quality of DGS and PTS, as given in Table 5.

6. Discussion

The purpose of this research is to identify the dimensions and relationships that exist between the three key constructs patient-perceived healthcare service quality, patient satisfaction, and care outcomes in private multi-specialty hospitals in the Indian context. The HSQ scale presented in the study makes an important contribution to the theory and practice in the healthcare domain. The findings suggest that healthcare consumers base their perceptions of HSQ on five key dimensions such as quality of clinical services, diagnostic services, administrative services, supportive services, coordination among healthcare professionals, and integration of patients and family members in the healthcare delivery process. Moreover, these primary dimensions comprise 13 underlying sub-dimensions. The sub-dimensions include doctors' care, nurses' care, medication management, pain management, laboratory services, radiology services, admission process, discharge process, food quality, cleanliness, patient safety aspects, coordination, and upholding patients' rights. The findings of the study support the idea that consumers appraise HSQ at an overall level, a construct level, and a sub-construct level. In addition, the model has assessed overall HSQ as a third-order factor, as stated in previous studies (Ampaw et al., 2020; Dagger et al., 2007; Swain & Kar, 2018). Also, each level determines perceptions at a subsequent level (Dagger et al., 2007). The results of

Table 5. Summary of the hypotheses results of the study

Relationships	Path-coefficients	Hypothesis Validation
CLS→PTS (H _{1a})	0.135***	Supported
DGS→PTS (H _{1b})	0.009	Not supported
ADS→PTS (H _{1c})	0.098***	Supported
SPS→PTS (H _{1d})	0.251***	Supported
CIT→PTS (H _{1e})	0.097**	Supported
HSQ→COUT (H ₂)	0.203***	Supported
PTS→COUT (H ₃)	0.481***	Supported
TC→PTS (H ₄)	0.193***	Supported
TC→COUT (H ₅)	0.173***	Supported
HSQ→PTS→COUT(H ₆)	0.107***	Supported

CLS-Clinical services; DGS-Diagnostic Services; ADS-Administrative services; SPS-Supportive services; CIT-Coordination and Integration; TC-Treatment Cost; HSQ-Healthcare service quality; PTS-Patient Satisfaction; COUT-Care outcomes

*** = p-value 0.001; **=0.01

this study show that HSQ has a significant relationship with PTS and care outcomes. Therefore, the hypotheses H_{1a} , H_{1c} , H_{1d} , H_{1e} , H_2 , and H_3 were supported. Moreover, the study also indicates that treatment cost has a significant effect on patient satisfaction and care outcomes (Andaleeb, 1998; Naidu, 2009; Swain & Kar, 2018). Accordingly, H_4 and H_5 were supported. The HSQ dimensions recognised in this study entail the two core domains of healthcare quality as recognized by Doanbedian (1980), such as technical and interpersonal aspects of clinical, diagnostic, supportive, and administrative services. In line with the previous literature (Andaleeb, 1998; Swain & Kar, 2018), this study signifies that the establishment of a higher level of HSQ and devising suitable pricing of healthcare services will lead healthcare consumers to have a higher level of satisfaction, which subsequently influences the attainment of a higher level of care outcomes.

The study empirically validated the strong relationship between HSQ, PTS, and care outcomes in the Indian context, examining the direct effect of HSQ on care outcomes and the indirect effect of HSQ on care outcomes mediated by patient satisfaction in support of earlier studies (Al Owad et al., 2022; Collier & Bienstock, 2006; Singh & Dixit, 2020). Integration of these viewpoints advances the understanding of these concepts from the developing countries' perspective. This study supports the findings of previous studies that perceived healthcare service quality influences patient satisfaction (Al Owad et al., 2022; Singh & Dixit, 2020) and affects behavioural intentions and loyalty (Badri et al., 2009; Fatima et al., 2018; Jandavath & Byram, 2016; Kessler & Mylod, 2011) which are referred to as care outcomes in this study. However, the quality of diagnostic services did not have a direct effect on patient satisfaction. This may be due to insufficient knowledge and limited exposure of healthcare consumers to diagnostic services. Also, the findings of our study generally supported the mediating role of PS between the HSQ and care outcomes relationship. Though the mediating role has been identified by prior researchers (Dagger et al., 2007; Fatima et al., 2018; Shabbir et al., 2016), our results underline the strength of this outcome in different healthcare settings and using different HSQ dimensions. In addition, the results of this study suggest that patients evaluate healthcare services at different levels, such as cognitive (HSQ), affective (PTS), and conative (COUT) levels, in line with the previous literature (Choi et al., 2004; Mohamed & Azizan, 2015). Therefore, to achieve a competitive advantage, hospitals must keep on emphasising continuous improvement of the quality of healthcare services. Further, HSQ can be used as a yardstick to improve their services compared to other healthcare organisations (Aagja & Garg, 2010; Jandavath & Byram, 2016; Padma et al., 2010). In agreement with the previous studies, this research also supports the notion that the cost of treatment has a significant effect on PTS (Amin & Nasharuddin, 2013; Andaleeb, 1998; Naidu, 2009) and care outcomes.

The study complements the prevailing literature by providing an exploratory higher-order model that assesses the perceived healthcare quality, patient satisfaction, and care outcomes. Additionally, this research endeavor has contributed to recognizing the role of CLS, DGS, ADS, SPS, and CIT in assessing HSQ and examining their effect on PTS and COUT. Further, this research confirmed the mediation effect of PTS in the relationship between HSQ and COUT. Due to the substantial indirect effect through PTS and its significant effect, PTS has the strongest total effect on COUT. This suggests the importance of measuring patient satisfaction in healthcare settings. Moreover, the study is valuable to both healthcare professionals and administrators in advancing their insight into the measurement of healthcare quality at different levels. Healthcare managers can emphasise the dimensions that improve healthcare quality from the consumers' viewpoint, enhancing satisfaction and care outcomes. Healthcare provider organizations can accentuate on improving structure and processes related to clinical, diagnostic, administrative, and supportive services that foster the overall healthcare service quality. Also, it is important to foster a culture of effective communication and involvement of patients and their family members while making health care decisions. The findings may be useful for policymakers in planning, designing, and reforming quality management systems for healthcare organizations. Moreover, it will serve as a forerunner and policy guide for stakeholders and future researchers in the domain of healthcare service quality.

7. Conclusion

Overall, the HSQ instrument established in the study can be used to measure, monitor, and improve patients' perceived healthcare quality in healthcare organizations. The HSQ literature strongly reveals that the dimensions considered in SERVQUAL or modified SERVQUAL scales are insufficient to address the holistic perspectives of perceived HSQ in hospital settings. Hence, this study provided a comprehensive approach to cover all the concerned areas, as many researchers can adopt it. Although developed in the context of private hospitals, it may interest a range of service providers, including public healthcare organizations. The study's findings provide valuable insights to healthcare administrators and managers in linking the HSQ and PTS that, in turn results in achieving projected care outcomes. Additionally, the study endorses the mediation effect of PTS on the association between care outcome and HSQ. In conclusion, this study has revealed several important associations between different dimensions of healthcare services provision, patients' perceptions about quality, patient satisfaction, and care outcomes. Healthcare managers can use this knowledge in strategising quality improvement efforts which further impact patient satisfaction and care outcomes. However, some limitations related to this study need to be stated. As the study is cross-sectional, all measures were collected at one point in time. Hence, we identify the need for longitudinal research that supports the underlying relationship between the key constructs of this exploration. Also, the model developed in this study denotes a static model of healthcare quality assessment because the study results demonstrate a single point in time. As 60 % of the respondents in this study have visited the respective hospitals for the first time, their perceptions may be biased. Hence, future research can consider the moderation effect of the severity of illness and nature of patient visits, such as first-time or repeat visits, on the perception of HSQ and PTS. Moreover, the study settings were limited to multi-specialty private hospitals in Karnataka. Replicating the study model in other types of healthcare organisations, such as public hospitals, charity-based hospitals, single specialty hospitals, and polyclinics, would further augment the assurance in this research model and the generalisability of the finding. The literature indicates the effect of ethical leadership and different leadership styles on patient satisfaction (Asif et al., 2019; McCay et al., 2018; Ruiz-Palomino et al., 2021). Research on customer orientation and satisfaction in the service and retail sectors revealed the effect of ethical leadership on the personal growth of employees that would help to satisfy the consumers better (Ruiz-Palomino et al., 2023; Ruiz-Palomino et al., 2021). In addition, studies in the hospitality industry showed that servant leaders foster the personal growth of employees, and the compassion and well-being of these employees would lead to better customer orientation, organisational citizenship behaviour, and provision of quality service (Jiménez-Estévez et al., 2023; Zoghbi-Manrique de Lara et al., 2023). Hence, future research can explore the mediation effect of leadership styles on patient satisfaction and investigate the positive effect of servant leadership on improving patient satisfaction and the quality of the services. Further, modeling healthcare service quality as a reflective-formative higher-order construct rather than the traditional reflective/formative constructs approach underlines the need for further research investigating and comparing the higher-order approaches.

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Appendix

Table A1. Measurement items and their reliability test values

Measurement Items	Item Code	Outer Loadings	Composite Reliability	AVE
Doctors treat patients with courtesy and respect	DC1	0.764	0.917	0.649
Doctors listening to patients	DC2	0.836		
Information to patients on illness and treatment	DC3	0.839		
Confidence and trust in doctors	DC4	0.854		
Doctors cleaning their hands	DC5	0.754		
Taking consent from patients	DC6	0.781		
Nurses treat patients with courtesy and respect	NC1	0.835	0.946	0.714
Nurses attention to details	NC2	0.852		
Information to patients on illness and treatment	NC3	0.841		
Availability of nurses on time	NC4	0.863		
Nurses response to call bell	NC5	0.841		
Confidence and trust in nurses	NC6	0.861		
Nurses cleaning their hands	NC7	0.821		
Information on medication	MM1	0.930	0.918	0.789
Explanation of side effects of medication	MM2	0.895		
Timely administration of medication	MM3	0.836		
Doctors briefing on pain management aspects	PM1	0.893	0.931	0.772
Nurses briefing on pain management aspects	PM2	0.898		
Degree of pain control	PM3	0.859		
Education on managing pain	PM4	0.865		

(Continued)

Table A1. (Continued)

Measurement Items	Item Code	Outer Loadings	Composite Reliability	AVE
Treatment started on the day of admission	CLS1	0.810	0.938	Formative
Details on the risks and benefits of treatment/operation/procedure in a way that patients could understand	CLS2	0.850		
answered our queries before the treatment/procedure	CLS3	0.877		
Availability of clinical lab test facilities	LS1	0.918	0.917	0.847
Care while collecting sample	LS2	0.922		
Information to patients on radiological tests	RS1	0.856	0.913	0.777
Staff accompanying patients to the radiology department	RS2	0.897		
Timely availability of imaging test reports	RS3	0.891		
Timely availability of clinical lab test reports	DGS1	0.921	0.910	Formative
Availability of equipment and facilities	DGS2	0.906		
Display of hospital services	AP1	0.898	0.913	0.777
Helpfulness of the admission staff	AP2	0.869		
Allocation of unique identification number	AP3	0.877		
Briefings on discharge process	DP1	0.873	0.915	0.726
Briefings post-discharge care	DP2	0.723		
Availability of preferred category of hospital bed	ADS1	0.811	0.833	Formative
Information on details of hospitalization	ADS2	0.835		
Availability of discharge summary	ADS3	0.722		

(Continued)

Measurement Items	Item Code	Outer Loadings	Composite Reliability	AVE
Taste of food	FD1	0.831	0.886	0.716
Provision of fresh and hygienic food	FD2	0.811		
Cleanliness of ward/room	CL1	0.929	0.960	0.889
Cleanliness of washrooms	CL2	0.954		
Availability of clean bed linen	CL3	0.946		
Scheduled visiting hours	PS 1	0.873	0.908	0.825
Safety and security measures	PS2	0.831		
Comfortable stay environment	SPS1	0.728	0.870	Formative
Availability of support services	SPS2	0.874		
Responsive support staff	SPS3	0.886		
Consistency of information shared	CN1	0.910	0.932	0.820
Coordination among doctors and nurses	CN2	0.914		
Communication of health information	CN3	0.893		
Involvement in treatment decisions	PR1	0.943	0.863	0.689
Encouragement for giving feedback	PR2	0.946		
Education on patient rights	PR3	0.532		
Regular briefing on health status/tests ordered	CIT1	0.823	0.886	Formative
Clarifications of queries asked	CIT2	0.893		
Access to health information	CIT3	0.830		
Briefing on the approximate cost of treatment during admission	TC1	0.830	0.940	0.798
Difference between the final bill and approximated cost of services	TC2	0.912		
Cost of services comparable with other hospitals	TC3	0.924		
The worthiness of cost compared to the range of services	TC4	0.905		

(Continued)

Table A1. (Continued)

Measurement Items	Item Code	Outer Loadings	Composite Reliability	AVE
Perception of clinical service quality	HSQ1	0.861	0.956	Formative
Perception of diagnostic service quality	HSQ2	0.898		
Perception of administrative service quality	HSQ3	0.931		
Perception of supportive service quality	HSQ4	0.897		
Perception of overall service quality	HSQ5	0.924		
Satisfaction with doctors' care	PTS1	0.753	0.936	Formative
Satisfaction with nurses' care	PTS2	0.793		
Satisfaction with the treatment procedure	PTS3	0.880		
Satisfaction with coordination among doctors and nurses	PTS4	0.881		
Satisfaction with upholding respect and dignity	PTS5	0.887		
Satisfaction with involvement in health care decisions	PTS6	0.888		
Satisfaction with pain management aspects	PTS7	0.891		
Satisfaction with medication management	PTS8	0.898		
Satisfaction with diagnostics services	PTS9	0.894		
Satisfaction with cleanliness and hygiene	PTS10	0.838		
Satisfaction with food services	PTS11	0.752		
Satisfaction with the cost of services	PTS12	0.749		
Future readiness to revisit the hospital	CO1	0.939	0.953	Formative
Recommendation to family and friends	CO2	0.940		
Improvement in the health status	CO3	0.920		

Table A2. Fornell-Larcker criterion																						
	ADS	AP	CIT	CL	CLS	CN	COUT	DC	DGS	DP	FD	HSQ	LS	MM	NC	PM	PR	PS	PTS	RS	SPS	TC
ADS	0.791																					
AP	0.777	0.881																				
CIT	0.711	0.762	0.884																			
CL	0.574	0.585	0.609	0.943																		
CLS	0.726	0.761	0.842	0.602	0.827																	
CN	0.698	0.759	0.849	0.613	0.814	0.906																
COUT	0.679	0.721	0.766	0.678	0.725	0.750	0.933															
DC	0.600	0.640	0.646	0.431	0.697	0.619	0.589	0.806														
DGS	0.674	0.700	0.693	0.588	0.688	0.675	0.618	0.612	0.914													
DP	0.716	0.743	0.686	0.540	0.677	0.687	0.660	0.580	0.582	1.000												
FD	0.458	0.560	0.531	0.563	0.529	0.549	0.574	0.422	0.498	0.468	1.000											
HSQ	0.601	0.643	0.658	0.598	0.639	0.647	0.672	0.550	0.590	0.565	0.554	0.903										
LS	0.729	0.746	0.712	0.596	0.715	0.708	0.648	0.629	0.798	0.640	0.505	0.639	0.920									
MM	0.741	0.793	0.814	0.656	0.800	0.798	0.748	0.629	0.668	0.747	0.583	0.667	0.710	0.888								
NC	0.695	0.732	0.740	0.624	0.767	0.757	0.732	0.683	0.656	0.669	0.555	0.667	0.698	0.749	0.845							
PM	0.719	0.788	0.823	0.619	0.803	0.808	0.754	0.669	0.658	0.745	0.521	0.678	0.704	0.862	0.731	0.879						
PR	0.667	0.684	0.701	0.623	0.693	0.674	0.798	0.585	0.626	0.611	0.520	0.624	0.660	0.698	0.648	0.705	0.830					
PS	0.628	0.653	0.644	0.695	0.606	0.638	0.755	0.499	0.582	0.625	0.589	0.589	0.612	0.686	0.650	0.677	0.707	0.817				
PTS	0.674	0.729	0.734	0.641	0.728	0.736	0.752	0.604	0.633	0.660	0.627	0.737	0.681	0.753	0.731	0.752	0.693	0.683	0.822			
RS	0.630	0.621	0.647	0.516	0.620	0.580	0.565	0.534	0.798	0.541	0.441	0.542	0.742	0.598	0.565	0.586	0.595	0.512	0.556	0.882		
SPS	0.643	0.690	0.691	0.847	0.683	0.707	0.792	0.522	0.641	0.630	0.763	0.683	0.648	0.747	0.720	0.710	0.707	0.781	0.749	0.557	0.832	
TC	0.553	0.625	0.652	0.518	0.618	0.629	0.644	0.473	0.542	0.548	0.523	0.664	0.575	0.659	0.570	0.630	0.569	0.543	0.700	0.508	0.607	0.893

Table A3. Heterotrait-Monotrait Ratio

	ADS	AP	CIT	CL	CLS	CN	COUT	DC	DGS	DP	FD	HSQ	LS	MM	NC	PM	PR	PS	PTS	RS	SPS	TC
ADS																						
AP	0.895																					
CIT	0.835	0.811																				
CL	0.702	0.653	0.701																			
CLS	0.891	0.855	0.874	0.645																		
CN	0.872	0.868	0.837	0.671	0.895																	
COUT	0.833	0.810	0.881	0.727	0.783	0.826																
DC	0.746	0.726	0.752	0.466	0.763	0.687	0.644															
DGS	0.895	0.843	0.857	0.677	0.796	0.796	0.716	0.720														
DP	0.840	0.802	0.758	0.558	0.704	0.728	0.687	0.607	0.649													
FD	0.539	0.605	0.586	0.582	0.550	0.581	0.596	0.442	0.558	0.468												
HSQ	0.736	0.710	0.747	0.633	0.682	0.702	0.713	0.594	0.677	0.577	0.567											
LS	0.859	0.891	0.872	0.679	0.820	0.827	0.743	0.731	0.881	0.707	0.558	0.724										
MM	0.837	0.821	0.868	0.727	0.893	0.808	0.836	0.709	0.800	0.803	0.627	0.733	0.842									
NC	0.847	0.817	0.845	0.666	0.823	0.828	0.785	0.743	0.756	0.691	0.572	0.705	0.796	0.832								
PM	0.893	0.897	0.858	0.672	0.879	0.801	0.825	0.741	0.772	0.785	0.549	0.731	0.819	0.975	0.795							
PR	0.865	0.806	0.849	0.702	0.786	0.776	0.802	0.674	0.764	0.670	0.569	0.699	0.795	0.820	0.730	0.812						
PS	0.736	0.706	0.714	0.718	0.630	0.676	0.785	0.523	0.651	0.625	0.589	0.603	0.676	0.737	0.672	0.713	0.769					
PTS	0.829	0.820	0.845	0.689	0.789	0.811	0.814	0.665	0.735	0.687	0.652	0.786	0.783	0.843	0.787	0.826	0.787	0.713				
RS	0.810	0.720	0.779	0.573	0.691	0.659	0.629	0.602	0.860	0.580	0.474	0.600	0.881	0.689	0.623	0.661	0.700	0.548	0.617			
SPS	0.854	0.846	0.865	0.884	0.803	0.850	0.830	0.620	0.812	0.712	0.884	0.793	0.809	0.810	0.841	0.846	0.867	0.880	0.886	0.677		
TC	0.679	0.707	0.755	0.559	0.674	0.697	0.700	0.518	0.633	0.573	0.546	0.709	0.664	0.740	0.613	0.694	0.646	0.568	0.760	0.572	0.725	

Table A4. Variance inflation factor results

Indicators	VIF	Indicators	VIF
CLS1	2.667	HSQ4	3.940
CLS2	3.238	HSQ5	4.850
CLS3	4.100	PTS1	2.886
ADS1	1.375	PTS2	3.570
ADS2	1.461	PTS3	4.133
ADS3	1.309	PTS4	4.410
DGS1	1.812	PTS5	4.657
DGS2	1.812	PTS6	4.726
CIT1	1.805	PTS7	4.530
CIT2	2.191	PTS8	4.371
CIT3	1.604	PTS9	4.170
SPS1	1.304	PTS10	3.471
SPS2	2.078	PTS11	2.919
SPS3	2.182	PTS12	2.571
HSQ1	3.406	COUT1	3.824
HSQ2	4.250	COUT2	3.922
HSQ3	4.804	COUT3	3.140