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Dimensions of Healthcare Service Quality and Their Measurement

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Abstract
Worldwide, both public and private healthcare institutions have been concerned about service quality. Numerous studies investigating what determines service quality and how it can be measured have been conducted as a result of the increased emphasis on patient-centered care. The goal of this paper is to examine and synthesize the body of published knowledge that is currently available in order to comprehend what constitutes high-quality healthcare services, their underlying dimensions, and the methods used to measure them. A review of the literature was conducted using the EBSCO and Google Scholar databases, covering important studies in the area of healthcare service quality, service quality dimensions, and its measurement. Aspects of the medical and non-medical aspects of healthcare service quality were used to present the findings. Conclusion: Patients evaluate dimensions of healthcare service quality differently depending on the context. Over gap score-based models, perceptions-only measures are dominant in the evaluation of healthcare quality. Additionally, the construct of healthcare service quality and its measurement have primarily been done from the perspective of the patient; the perspective of the provider regarding the healthcare service quality has not been taken into consideration.

Keywords: Measurement, Healthcare Service Quality, and SERVQUAL

I. Introduction

Serious questions about the efficiency of care in healthcare services have been raised by the 2015 draft of India's national health policy. In developing nations like India, access to, availability of, and affordability of high-quality care are serious issues (Deloitte, 2012). The following are the areas of concern in the Indian healthcare sector, per an industry report (PwC, 2015):

1. Only 30% of Indians have access to medical facilities.
2. The top 20 cities in India only account for 70% of the healthcare infrastructure in the country.
3. India is responsible for 21% of the world's disease burden.
4. Within ten years, non-communicable diseases alone will account for 63% of disease burden and have a negative economic impact of 23,000 people.
5. India needs to add 650,000 beds by 2017, which will cost $1,625 billion in capital.
6. In rural and urban India, respectively, loans are used to pay for about 47% and 31% of the country's healthcare needs.

The National Health Policy (NHP) of India 2015 states that 5% of the GDP is allocated to health, with 80% of medical spending coming from personal resources. The WHO stipulates that there should be one doctor for every 1,000 patients, but India currently has 0.7 doctors for every 1,000 patients, which strongly suggests that there is a shortage of high-quality healthcare services.

India has 1.7 nurses per 1,000 patients, which is lower than the WHO-mandated standard of 2.5 nurses per 1,000 patients. The WHO estimates that India has 0.9 beds per 1,000 people. To meet the demand, it is predicted that India will need 2.4 million more nurses and 1.54 million more doctors. Only 1.04 percent of the GDP, or about 4 percent of all government spending, or $957 per person at today's market prices, is spent by the Indian government on healthcare (Central Bureau of Health Intelligence, 2015).

Patient-centered care and high-quality treatment are two guiding principles of the government's national health policy from 2015, which states that healthcare services should be "effective, safe, and convenient, delivered with dignity and confidentiality, and all facilities across all sectors should be assessed, certified, and encouraged to maintain high-quality treatment." Being a high-contact service, healthcare services have a greater need to uphold their credibility by offering high-quality services (Yee, Yeung, & Cheng, 2010). Customer loyalty and satisfaction are both strongly correlated with service quality (Olorunniwo, Hsu, & Udo, 2006; Santouridis & Trivellas, 2004; Sivakumar & Srinivasan, 2009). A higher perceived value results from improved design quality and conformance to standards. This results in higher costs, higher receipts, and higher profitability (Zeithaml, 2000). Higher service quality is urgently needed given the fierce competition in private healthcare (Zarei, Arab, Froushani, Rashidian, & Ghazi Tabatabaei, 2012), which assesses the competitiveness of the clinic and the level of development of the country's healthcare system (Senic & Marinkovic, 2012). However, it is argued that while providing quality service may not always ensure organizations make money, the cost of doing so can result in a 20% loss (Mukherjee, 2006, p. 62).

Significant correlation exists between patient satisfaction and hospital performance (Deloitte, 2016). However, based on what they observe and experience, patients' selective filtering, distortion, and retention impact their perception of services that are provided with the same level of quality (Johnston & Clark, 2008, p. 129). Customers' internal and subjective reactions to any direct or indirect contact with various touch points in the hospital settings occur as they move through a journey in pursuit of wellness and health in a healthcare setting; however, these touch points do not have equivalent values (Meyer & Schwager, 2007). The satisfaction of a patient's experience in a medical setting is a total (Brown & Swatrz, 1989) with the individual transactions and interactions that have taken place throughout this journey to produce memorable events (Pine & Gilmore, 1998). As a result, the weighting of each aspect of the healthcare service quality measurement may vary depending on the context in which it is used.

Hospital service quality-related studies have been conducted in a variety of settings in India and around the world, including Bahrain (Ramez, 2012), Bangladesh (Andaleeb, 2001), Burkina Faso (Baltussen, Yé, Haddad, & Sauerborn, 2002), Egypt (Mostafa, 2005), Guiena (Haddad, Foureier, & Potvin, 1998), Iran (Bahadori, Radabadi, Ravan (Berry & Bendapudi, 2007; Otani, Waterman, Faulkner, Boslaugh, & Dunagan, 2010).

This article's goal is to investigate and organize the vast body of unorganized published knowledge related to (a) healthcare service quality, (b) healthcare service quality dimensions, and (c) healthcare service quality measurement techniques. These three aspects of service quality in the healthcare sector will be discussed in more detail in the following sections of this article, which will help to summarize the existing knowledge and lay the foundation for future research.

Method

Databases like EBSCO and Google Scholar were searched to find the important studies that had been done in the area of healthcare service quality. The search was conducted using a combination of the keywords "health-care," "service," "service quality," "dimensions," and "measurement." The following criteria were used to determine which articles should be included in the study's search results: (a) the paper had to have been published in a peer-reviewed journal; (b) it had to be a full text article written in English; (c) it had to contain analysis or views about healthcare services; and (d) it had to contain some qualitative and/or quantitative findings about

hospitals and healthcare settings. The period of time for the literature search was from January to March 2017. The criteria for inclusion were met by a total of 124 articles. The articles that did not meet the criteria for inclusion were removed after a review of the paper's title, abstract, and findings. Following a review of the paper, the findings were divided into three major categories that were chosen for the study's objectives: healthcare service quality, healthcare service quality dimensions, and healthcare service quality measurement. We divided the dimensions of healthcare service quality found in the literature into medical and non-medical aspects of care. The variables studied in earlier studies and presented in research articles were categorized according to the medical and non-medical aspects of care.

Result

There were 21 research papers included under the heading of "healthcare service quality" that were written between 1986 and 2016. In order to comprehend the components of healthcare service quality, 52 research articles from the health care sector that were published between 1985 and 2016 were found. For the purposes of this study, 42 research articles measuring the quality of healthcare services that were published between 1992 and 2016 were shortlisted.

This analysis included healthcare studies from 19 different nations. The study did not include any articles that dealt with customer satisfaction, loyalty, profitability, interconnections, or their relationships to service quality. As they fell outside the scope of this research, research articles in healthcare settings relating to patient ratings, satisfaction levels or models, governmental policies, etc. were excluded. The quality of healthcare services, its dimensions, and its measurement are divided into three conceptualized themes in the results section. The work done under each theme is highlighted in each section, and the important and pertinent information furthers the goal of this study.

Concept of Service Quality

A definition of services might be "Services are deeds, processes, and performances" (Zeithaml & Bitner, 1996, p. 5). "An activity, benefit, or satisfaction that is primarily intangible and does not result in the ownership of anything and is offered for sale" (Kotler, Keller, Koshy, & Jha, 2013, p. 338). "An act or performance that benefits customers by causing the recipient to experience the desired change" (Lovelock & Wright, 1999, p. 2). Services are evaluated based on a number of criteria and are closely related to quality.

The customer's assessment of service quality includes both their evaluation of performance during the service delivery process and their subjective assessment of whether the services met the established standards. Customers frequently have preconceived notions about the services they will use. Perceived service quality (Grönroos, 1984) is the difference between the customer's prior expectations before receiving the service and the perception the customer forms after receiving the service. Therefore, service quality can be defined as the gap between customers' perceptions of services and their expectations of the company providing those services (Bolton & Drew, 1991; Parasuraman, Zeithaml, & Berry, 1988). However, the gap between patients' or patients' companions' perceptions of services and their expectations for the hospital providing such services is what is known as hospital service quality (Aagja & Garg, 2010).

Even though healthcare is a service, it differs fundamentally from other service-related industries. Healthcare is a credence service in that it can be challenging for the patient to assess clinical quality even after the service has been rendered (Berry & Bendapudi, 2007):

1. Customers experience some combination of illness, pain, unpredictability, fear, and a sense of powerlessness.
2. Because healthcare is a service that people need but may not want, customers might be reluctant co-producers.
3. Consumers value their privacy on a physical, emotional, and spiritual level.
4. Customers require full-service support.
5. Customers are susceptible to harm.
6. Clinicians experience both physical and emotional stress.

In contrast to some other service sectors, healthcare providers are also equal stakeholders in the process of providing services, and their expectations and perceptions of how the healthcare system functions are crucial (Brown & Shwartz, 1989). Evaluation of service quality has shown to be
controversial, especially when expertise is needed in more "experiential" services like healthcare (Purcarea et al.,

2013). The way that service quality is evaluated varies depending on who is providing the service and who is receiving it. Receivers evaluate services based on their overall impression of the consumed service, whereas professionals prioritize the design and delivery aspects of the service (Brown & Swartz, 1989). The payer, typically third-party insurance providers, and, in some cases, the government and government-aided organizations, emphasize that the cost effectiveness of care is one of the most crucial determinants of care quality.

Clinicians typically believe that the "cost of care" model of quality is flawed and feel obligated to prioritize life and health over the expense of such interventions. Additionally, it is possible to argue that a procedure's results can be successful despite flawed processes, and vice versa (Ransom, Joshi, & Nash, 2005, p. 65). Consequently, the meaning of the term "quality of care" varies among the various parties involved in the healthcare system (Pai & Chary, 2016). The results are a sign of quality issues, but they cannot tell us whether the care was of poor or excellent quality.

Service Quality in Healthcare

Patient safety, clinical effectiveness, and patient experience (compassion, dignity, and respect) are the three domains that make up quality of care (Black, Varaganum, & Hutchings, 2014). WHO stated that the quality of healthcare services should be timely, people-centered (responding to individual preferences, needs, and values), safe (avoiding injuries to those for whom the care is intended), and effective (providing evidence-based healthcare services to those who need them) (reducing waiting times and sometimes harmful delays). The degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with the most recent professional knowledge is the IOM definition of quality of care. The IOM definition places a strong emphasis on technical performance and the most recent information in the field. The assessment of current professional knowledge is relative and subject to differences not only between nations but also between people. Additionally, according to Duggirala, Rajendran, and Anantharaman (2008), customers of healthcare services are often in a state of physical, psychological, or both types of discomfort, which makes it possible that their assessments of the caliber of the healthcare services are inaccurate.

Inadequate quality may cause patients, their family members, and their attendants to experience a range of emotions, including frustration, despair, anxiety over the costs and complexity of care, tension from difficulty obtaining supplies for care, and alienation from the healthcare system because it takes so little time to understand and address their needs (Ransom et al., 2005, p. 6). A high level of service quality can encourage overuse, whereas a low level of service quality can encourage underuse and, occasionally, bypassing (Andaleeb, 2001).

Research on healthcare quality has identified a number of characteristics, including technical performance, interpersonal relationship management, amenities of care, responsiveness to patient preferences, efficiency, and cost effectiveness (Ransom et al., 2005, p. 26). The quality was categorized as technical and functional quality by Grönroos (1984). He continued by saying that functional quality depends on technical quality. Structure (i.e., well-trained, well-appointed, and well-organized settings), process (appropriateness and skill in the actions performed), or outcome are the three aspects of healthcare that Donabedian (1966) claimed are involved in the evaluation of healthcare service quality (health status-related indicators). Donabedian (1988) emphasized both the interpersonal and technical aspects of quality in the healthcare system. Technical considerations are the service provider's expertise and judgment, and information sharing between the healthcare provider and the patient improves collaboration in the delivery of care.

The ideas of technical quality and interpersonal quality in healthcare services were supported by Baltussen et al. in 2002. Piligrimiene and Buciuniene (2008) pointed out that while patients place more value on functional aspects of quality than on technical ones, healthcare professionals are more likely to favor the latter. According to De Silva and Valentine (2000), the concepts of responsiveness and satisfaction are distinct because the latter assesses the clinical interactions in the healthcare facility and the former the effectiveness of the healthcare system.

From the literature, we developed a template that divides medical and non-medical aspects of healthcare quality. In Table A1, this classification is provided. Technical quality, outcome quality, and interpersonal quality are all medical aspects of care that have a direct impact on patients' health and wellbeing. Services-capes, accessibility, and responsiveness are three non-medical aspects of quality that have an indirect impact on a patient's health as a

result of their interactions with patients during the service delivery process.

Dimensions of Healthcare Service Quality

In five different industries, Parasuraman et al. (1985) identified 10 dimensions of service quality. Later, they condensed these dimensions to just five, known as RATER (responsiveness, assurance, tangibility, empathy, and reliability), which is widely used in a variety of service contexts, including healthcare (Altuntas et al., 2012; Bahadori et al., 2015; Brahmbhatt, Baser, & Joshi, 2011; Irfan et al., 2012; Izogo & Ogba, 2015; Jandavath & Byram, 2016; Kheng, Mahamad, Ramayah, & Mosahab, 2010; Kondasani & Panda, 2015; Pramanik, 2016; Raajpoot, 2004; Ramez, 2012; Ramsaran-Fowdar, 2008; Sohail, 2003; Thiakarajan & Krishnaraj, 2015; Ting-Kwong Luk & Layton, 2004; Venkateswarlu, Ranga, & Sreedhar, 2015; Zarei et al., 2012). Service quality dimensions, however, depend on the context (Ladhari, 2008). Most reports on healthcare quality focus on factors like structural aspects of care, processes, and results (Rothberg, Morsi, Benjamin, Pekow, & Lindenauer, 2008). Additionally, hospital patients prioritize various attributes differently (Dagger, Sweeney, & Johnson, 2007; Otani et al., 2010). Medical and non-medical aspects of care can also be used to categorize the aspects of healthcare service quality.

There are three components to medical care: technical, outcome-related, and interpersonal. According to Baltussen et al. (2002), Donabedian (1988), Grönroos (1984), Piligrimiene & Buciuneine (2008), medical facilities and the care provider's knowledge, skills, and judgment make up the technical aspect of healthcare quality. The outcome dimension of quality includes timely, safe, equitable, effective, efficient, cost-effective, and patient-centered care (Donabedian, 1988; World Health Organization [WHO], 2000). Information sharing, friendliness, attentiveness, and fostering understanding and collaboration through information sharing are all aspects of the interpersonal dimension of quality (Baltussen et al., 2002; Chahal & Kumari, 2010, 2012; McKinsey, 2015).

Services capes, accessibility, and responsiveness are the three dimensions of non-medical care that have an indirect impact on health and wellness. According to Grönroos (1984; Lovelock & Wright (1999, p. 32), servicescapes include the fundamental amenities and the physical setting in which the service is provided.

Accommodations, building appearance, landscaping, staff uniforms, signage, cleanliness, and other factors may be considered. The WHO defines accessibility as the facility's location, the travel time required to get there, and the cost of the care.

This dimension also takes into account how simple admission, billing, discharge, and other non-health-related processes are. The expectations of care that a reasonable human being would have are what responsiveness in this context refers to (De Silva & Valentine, 2000). This includes the respect and autonomy of the patient, the privacy of the treatment, prompt service, availability of social support networks while receiving care, and the standard of the basic amenities. Under the six dimensions of medical and non-medical aspects of care that have been identified, Table A1 presents a classification of the major characteristics of care that have been studied. It should be noted that the majority of studies only reviewed a portion of the characteristics of healthcare service quality dimensions.

Medical Aspects of Care

The technical aspect of care includes factors like delivery personnel (Haddad et al., 1998; Pai & Chary, 2013; Satsanguan, Fongsuwan, & Trimetsoontorn, 2015), instruments used (Ramsaran-Fowdar, 2008), the availability of medications (Krishnamoorthy & Srinivasan, 2014; Mohamed & Azizan, 2015; Rao, Peters, & Bandeen (Duggirala et al., 2008; Krishnamoorthy & Srinivasan, 2014; Otani et al., 2010). The outcome dimension of care includes characteristics in addition to reliability, such as need (Teng et al., 2007; Ting-Kwong Luk & Layton, 2004), sanitation (Teng et al., 2007), fairness and equity (Krishanamoorthy & Srinivasan, 2014; Ramsaran-Fowdar, 2008), timely (Ravichandran et al., 2010), prevention (Prakash & Mohanty (Pai & Chary, 2016). Informed choice (Donabedian, 1988; Prakash & Mohanty, 2012), medical communication (Andaleeb, 2001; Duggirala et al., 2008; Kondasani & Panda, 2015; Makarem & Al-Amin, 2014; Pai & Chary, 2013; Piligrimiene & Buciuniene, 2008; Rao et al., 2006), customization and attention are some of the interpersonal aspects of care in addition to assurance (Teng et al., 2007).

Non-Medical Aspects of Care

The infrastructure, facility, facility (Haddad et al., 1998; Mostafa, 2005), cleanliness, food and room (Otani et al., 2010), physical environment (Chahal & Kumari, 2010, 2012; Chang et al., 2013; Kondasani & Panda, 2015; Krishnamoorthy & Srinivasan, 2014; Pai & Chary, 2013) and others are included in the services capes dimension of care (Makarem & Al-Amin, 2014). The accessibility dimension deals with factors like financial and physical access (Baltussen et al., 2002; Thiakarajan & Krishnaraj, 2015), convenience (Choi et al., 2004; Teng et al., 2007), admission and discharge (Aagja & Garg, 2010; Amin & Nasharuddin, 2013; Makarem & Al-Amin, 2014; Otani et al., 2010), and other administrative process (Thiakarajan & Krishnaraj, 2015). One of the most researched aspects of care is responsiveness, which includes qualities like empathy (Haddad et al., 1998), dignity (Haddad et al., 1998; Piligrimiene & Buciuniene, 2008), conduct (Baltussen et al., 2002), sincerity (Raajpoot, 2004), confidentiality (Piligrimiene & Buciuniene, 2008), courtesy (Pilgrimiene & Buciuni (Aagja & Garg, 2010; Amin & Nasharuddin, 2013; Duggirala et al., 2008), Privacy and trust (Prakash & Mohanty, 2012; Pai & Chary, 2013) (Donabedian, 1988; Kondasani & Panda, 2015).

Measurement Techniques in Healthcare Service Quality

Measurement of patient expectations and perceptions offers important insights into the method used to assess the quality of medical services (Babakus & Mangold, 1992). Because service quality dimensions depend on how patients perceive their healthcare experiences and are determined by those who receive care, measuring them is challenging (Kilbourne, Duffy, Duffy, & Giarchi, 2004). The most widely used scale to assess service quality in healthcare settings is called "SERVQUAL" (Parasuraman et al., 1988), which measures the discrepancy between service recipients' perceptions and service providers' expectations. However, a number of studies have criticized the SERVQUAL scale (Babakus & Mangold, 1992; Cronin & Taylor, 1992, 1994; Teas, 1994; Teas & Kenneth, 1993). Additionally, it is argued that the SERVQUAL is context-specific and that its universality should be contested in favor of tailoring it to a particular service's needs (Andaleeb, 2001; Babakus & Mangold, 1992). As a result, performance-only scores, or "SERVPERF," are adequate to measure service quality (Brady, Cronin, & Brand, 2002; Cronin & Taylor, 1992; Prakash & Mohanty, 2012) and have higher predictive validity of customer satisfaction. Furthermore, perceptions of the services may exceed for some customers with low expectations from the healthcare systems (Sohail, 2003). (Babakus & Mangold, 1992; Cronin & Taylor, 1994; Lee, Lee, & Yoo, 2000; Prakash & Mohanty, 2012; Ramez, 2012; Ting-Kwong Luk & Layton, 2004). Jain and Gupta (2004) believed that SERFPERF should be the preferred research instrument for comparing settings in the same industry of different types; however, SERVQUAL has superior diagnostic results for identifying problem areas in the service delivery process. Recently, Ramsaran-Fowdar (2008) created the "PRIVHEALTHQUAL" scale to assess the level of service in private hospitals. For government hospitals, Aagja and Garg (2010) developed the "PubHosQual" scale.

OPD, IPD, and dis-charged patients who had received general or specialized care in public or private medical facilities were studied to determine the dimensions of service quality. One could argue that the people who accompany patients are also consumers of healthcare services (Padma, Rajendran, & Sai, 2009). This viewpoint has also been incorporated by some studies that assessed how their family members, guardians, attendants, and others felt about the quality of the healthcare services they received (Pai & Chary, 2016; Pakdil & Harwood, 2005; Ramsaran-Fowdar, 2008; Satsanguan et al., 2015). (Aagja & Garg, 2010; Prakash & Mohanty, 2012; Sivakumar & Srinivasan, 2009).

The SERVQUAL questionnaire, or a modified version of it, was almost universally used as the instrument in studies to measure the service quality. Otani et al., (2010) conducted telephone interviews with 4,320 patients who were discharged from the facility within 7-14 days. The minimum sample size for such questionnaire-based studies ranges from 100 respondents (Duggirala et al., 2008) to 2,448 respondents (both IPD and OPD) (Rao et al., 2006). Purcarea et al. (2013) also conducted surveys via mail and email with patients who had been discharged; however, Chahal and Kumari (2012) and Dheepa, Gayathri, and Karthikeyan (2015) used a schedule to gather responses.

For measuring the dimensions of service quality, the studies used a range of items, from 15 (Sohail, 2003) to 86 (Duggirala et al., 2008), on a 3–7 point Likert scale. These dimensions differ by nation, culture, type of healthcare need, urban vs. rural patients, and other factors, leading the majority of researchers to identify the precise factors influencing service quality. As shown in Table A2, a variety of analytical techniques, including principal component analysis, factor analysis, ANOVA, correlation, multiple regression, and structured equation modeling, have been used to identify and measure different aspects of service quality.

Discussion

Many businesses have started service quality measurement programs recently (Bolton & Drew, 1991). The most crucial factor in determining the caliber of medical services is patient satisfaction, but this metric is not always reliable (Amin & Nasharuddin, 2013; Gupta & Rokade, 2016; Jandavath & Byram, 2016). (Cleary & Edgam-Levitan, 1997). Customer expectations are the starting point for measuring service quality, but customer satisfaction can only be measured after the service has been provided (Bolton & Drew, 1991; Boulding, Kalra, Staelin, & Zeithaml, 1993; Caruana, 2002; Cronin & Taylor, 1994). Therefore, using customer satisfaction ratings to gauge service quality can be skewed because a patient may recover but still not be happy with the level of care received, or the other way around. Patient satisfaction varies depending on the characteristics of the consumer, including their level of education (Pakdil & Harwood, 2005), where they are in the service delivery process (Dagger et al., 2007), and the information they share before, during, and after the treatment (McKinsey, 2015).

The classification of the dimensions of healthcare service quality into medical and non-medical aspects of care becomes obvious. Customers of healthcare services place more value on the health professional's compassion and support than on the results of the procedure or their technical expertise (McKinsey, 2015). The five dimensions of healthcare services—reliability, assurance, tangibility, responsiveness, and empathy—have been the subjects of the most research. However, some factors, such as hospital image (Pai & Chary, 2016), point toward the healthcare facility's branding. These context-dependent dimensions were primarily discovered from the demand side, i.e., patients. The dimensions of healthcare service quality need to be assessed from the supply side as well, that is, from providers' perspectives, because services like healthcare require high levels of experience and credibility (Zeithaml, 2000). (Choi et al., 2004).

Both SERVPERF (Cronin & Taylor, 1994) with performance-only measures and SERVQUAL (Parasuraman, Berry, & Zeithaml, 1991), which uses the gap score between patients' expectations and perceptions of the performance of the service delivered, are frequently used as measurement tools for service quality evaluations. Administrators have the opportunity to identify the areas where the gap is greatest thanks to SERVQUAL's inherent ability to calculate the difference between expectations and preconceptions of service delivered on the five dimensions. Additionally, SERVQUAL enables weighing different dimensions according to how customers perceive them.

It leaves it up to the managerial skills to determine how to close these gaps, though. Most studies have not measured the desired, adequate, and perceived service as called for by the SERVQUAL model's creators themselves, aside from adding other pertinent dimensions specific to the service settings (Parasuraman et al., 1994).

We have made every effort to include nearly all studies that are pertinent to healthcare service quality, its dimensions, and measurement methods in light of the literature that is currently available. Numerous studies that may have been carried out by the institutions themselves for internal use are available. This study may be useful for learning about how healthcare services are conceptualized differently from how they are in other traditional services.

Conclusion and Scope for Future Research

There is no single set of dimensions or measurement standard available for the evaluation of healthcare service quality, according to the published knowledge compiled in this study. Since patients alone are unable to evaluate the technical side of service quality, almost all methods and scales used to measure healthcare service quality do not take this into account. Understanding the evaluation process requires taking a dyadic perspective, which involves looking at how both the client and the service provider evaluate the quality of the provided services and

their satisfaction with the experience (Brown & Swartz, 1989). Therefore, it is necessary to identify the service quality dimensions from the perspective of the service provider. Furthermore, the structure and mode of delivery are considered in the current standards for accrediting healthcare organizations. This makes it difficult for governments in countries like India to manage and assess the quality of healthcare services. When considering the quality of healthcare services, we must look beyond "what should be" and consider "what could be," taking into account demand and supply side expectations and perceptions.

Appendix A

Table A1. Classification of Major Attributes in Healthcare Studies Under Medical and Non-medical Aspects of Care

	Medical Aspects			Non-Medical Aspects		
Author (Year)	Technical	Outcome	Interpersonal	Servicescapes	Accessibility	Responsiveness
Donabedian, A. (1988)		Outcome	Informed choice	Structure		Privacy, confidentiality, concern, empathy, honesty, tact, sensitivity
Haddad, S., Fourner, P., Potvin, L. (1998)	Delivery, personnel			Facility		Respect, compassion, dignity
Andaleeb, S. S. (2001)			Assurance, communication			Responsiveness, discipline, Baksheesh
Hasin, M. A. A., Seeluangsawat, R., Shareef, M. A. (2001)				Cleanliness		Service of staff
Baltussen, R. M. P. M., Ye, Y., Haddad, S., Sauerborn, R. S. (2002)	Adequacy of resources		Delivery		Financial and physical access	Personal practices & conduct
Sohail, S. S. (2003)		Reliability	Assurance	Tangibles		Responsiveness, empathy
Luk, S. T. K. W., Layton, R. (2004)		Outcome, reliability, need		Tangibles		Assurance, empathy & responsiveness
Duong, D. V., Binns, C. V., Lee, A. H., Hipgrave, D. B. (2004)		Delivery	Interpersonal aspects	Facility	Access	
Choi, K. S., Cho, W. H., Lee, S., Kim, C. (2004)					Convenience	
Raajpoot, N. (2004)		Reliability	Assurance	Tangibles		Sincerity
Rao, K. D., Reters, D. H., Roche, K. D.(2006)	Medicine availability		Medical information	Infrastructure		Staff and doctor's behaviour

Mostafa, M. M. (2005)	Human performance	Reliability		Facility		
Olorunniwo, F., Hsu, M. K., Udo, G. F. (2006)	Knowledge			Tangibles	Access	Recovery and responsiveness
Teng, C. I., Ing, C. K., Chang, H. Y., Chung, K. P. (2007)		Sanitation	Need management, customization, attention	Quiet	Convenience	Assurance
Dagger, T. S., Sweeny, J. C., Jhonson, L. W. (2007)			Interaction	Atmosphere, tangibles		
Piligrimiene, Z., Buciuniene, I. (2008)	Skills, knowledge, capability, credibility		Effective communication	Tangibles	Accessibility	Respect, confidentiality, courtesy, empathy
Fowdar, R. R. R. (2008)	Core medical services, professionalism, skill, competence, equipment	Reliability, fair, equitable	Records, information dissemination	Tangibles		Responsiveness, assurance, empathy
Duggirala, M., Rajendran, C., Ananthraman, R. N. (2008)	Doctors' and nursing care, paramedic quality, process of care, safety indicators		Communication	Infrastructure	Administrative procedure	Overall experience with care, social responsibility
Kheng, L. L., Mahamad, O., Ramayah, T., Mosahab, R. (2010)		Reliability	Assurance	Tangibles		Responsiveness, empathy
Mosahab, R., Mahamad, O., Ramayah, T. (2010)		Reliability	Assurance	Tangibles		Responsiveness, empathy
Aagja, J. P., Garg, R. (2010)	Medical quality				Admission, discharge	Social responsibility
Otani, K., Waterman, B., Faulkner, K. M., Boslaugh, S., Dunagan, W. C. (2010)	Physician and nursing care		Staff care	Food and room	Admission	

(Table A1 Continued)

(Table A1 Continued)

	Medical Aspects			Non-Medical Aspects		
Author (Year)	Technical	Outcome	Interpersonal	Servicescapes	Accessibility	Responsiveness
Ravichandran, K., Mani R. T., Kumar, S. A., Prabhakaran, S. (2010)		Timely		Modern equipment		Responsiveness, courtesy, willingness to help
Brahmbhatt, M., Baser, N., Joshi, N. (2011)		Reliability	Process	Tangibles	Policy	Assurance, empathy
Altuntas, S., Dareli, T., Yilmaz, M. K. (2012)		Reliability	Assurance	Tangibles		Responsiveness, empathy
Ramez, W. S. (2012)		Reliability	Assurance	Tangibles		Responsiveness, empathy
Irfan, S. M., Ijaz, A., Farooq, M. M. (2012)		Reliability	Assurance	Tangibles		Responsiveness, empathy
Prakash, A., Mohanty, R. (2012)	Treatment, diagnosis, research	Prevention	Education		Administration	Trust
Arun Kumar, G., Manjunath, S. J., Chethan, K. C. (2012)		Reliability		Tangibles		Responsiveness, empathy
Senic, V., Marinkovic, V. (2012)		Promptness	Personal relationships	Tangibles		
Zarei, A., Arab, Md., Froushani, A. R., Tabatebaei, S. M. G. (2012)		Reliability		Tangibles		Responsiveness, empathy
Chahal, H., Kumari, N. (2012)	Expertise			Process, physical environment		Attitude, behaviour
Chang, C. S., Chen, S. Y., Lan, Y. T. (2013)		Reliability	Assurance	Environment and space		Responsiveness
Amin, M., Nasharuddin, S. Z. (2013)	Medical service				Admission, discharge	Social Responsibility

Pai, Y. P., Chary, S. T.(2013)	Personnel quality	Personalization	Communication	Physical environment and infrastructure	Administrative procedures	Image, trustworthiness, process of care, relationship
Krishnamoorthy, V., Srinivasan, R. (2014)	Medical service, medical care, availability of medicine	Equality		Physical ambience, infrastructure, tangibility	Admission, discharge	Empathy
Makarem, S. C., Al Amin, M. (2014)		Pain Management	Nurse, physician and medication communication	Cleanliness	Discharge information	Responsiveness, quietness
Venkateshwarlu, P., Ranga, V., Sreedhar, A. (2015)		Reliability	Assurance	Tangibles		Responsiveness, empathy
Izogo, E. E., Ogba, I. E. (2015)		Reliability	Assurance	Tangibles		Responsiveness, empathy
Bahadori, M., Raadabadi, M., Ravangard, R., Baldacchino, D. (2015)		Reliability	Assurance	Tangibles		Responsiveness, empathy
Dheepa, T., Gayathri, N., Karthikeyan, P. (2015)		Reliability	Assurance	Tangibles		Responsiveness, empathy
Satsanguan, L., Fongsuwan, W., Trimentsoontron, J. (2015)	Personnel quality	Reliability	Service of support staff	Infrastructure		
Mohamed, B., Azizan, N. A. (2015)	Medical and nursing care		Interaction	Infrastructure	Administrative procedure	
Kondasani, R. K. R., Panda, R. K. (2015)		Reliability	Communication	Physical environment		Customer friendly staff, responsiveness, privacy and safety, consideration
Thiakarajan, A., Krishnaraj, A. S. R. (2015)		Safety, consideration			Preference of place, hospital charges	Product/service consideration

(Table A1 Continued)

(Table A1 Continued)

	Medical Aspects			Non-Medical Aspects		
Author (Year)	Technical	Outcome	Interpersonal	Servicescapes	Accessibility	Responsiveness
Jandavath, R. K. N., & Byram, A. (2016)		Reliability	Assurance	Tangibles		Responsiveness, empathy
Pramanik, A. (2016)		Reliability	Assurance	Tangibles		Responsiveness, empathy
Pai, Y. P., Chary, S. T. (2016)	Personnel	Clinical care process, personalization	Communication	Healthscapes	Administrative procedure	Relationship,
Pramanik, A. (2016)		Reliability		Tangibility		Responsiveness, empathy, assurance

Source: The authors.

Table A2. Measurement Techniques in Healthcare Service Quality

Author	Types of Respondents	Sample Size	Method of Data Collection	No. of Items Used	Scale	Analytical Technique
Babakus E., Mangold, W. G.	Discharged in 13 months	443	Mail-based questionnaire		5-point Likert scale (5 = strongly agree and 1 = strongly disagree)	EFA and CFA
Haddad, S., Fourner, P., Potvin, L.		241	Questionnaire	20 items		
Andaleeb, S. S.	Patient who utilized health services in 12 months	207	Questionnaire	25	7-point Likert scale (1 = strongly disagree, 7 = strongly agree)	Factor analysis and regression
Hasin, M. A. A., Seeluangsawat, R., Shareef, M. A.	IPD and OPD	IPD = 138, OPD = 255	Questionnaire	18		ANOVA
Brady, M. K., Cronin Jr, J. J., Brand, R. R.		2,278		10		CFA
Caruana, A.	Quantitative	200	Postal questionnaire	21	3-point scale for perception (worse than expected, about as expected, better than expected)	CHAID
Baltussen, R. M. P. M., Ye, Y., Haddad, S., Sauerborn, R. S.		1,081	Questionnaire	20	5-point Likert scale (−2 very unfavourable+2 very favourable)	Factor analysis
Sohail, S. S.	Discharged patients within 6 months	150	Mail-based questionnaire	15	5-point Likert scale (1 = strongly agree and 2 = strongly disagree)	CFA GAP score
Jain, S. K., Gupta, G.		400	Questionnaire	22	5-point Likert scale	GAP score and outcome score
Kilbourne, W. E., Duffy, J. A., Duffy, M., Giarchi, G.	Nursing home residents in long term care	294	Questionnaire	22	7-point Likert scale (1 = disagree very strongly and 7 = agree very strongly)	SEM

(Table A2 Continued)

(Table A2 Continued)

Author	Types of Respondents	Sample Size	Method of Data Collection	No. of Items Used	Scale	Analytical Technique
Luk, S. T. K. W., Layton, R.		288	Questionnaire	24		EFA
Duong, D. V., Binns, C. V., Lee, A. H., Hipgrave, D. B.	Prenatal and postpartum women	396	Interview	20	3-point scale (favourable, neutral, unfavourable)	PCA
Choi, K. S., Cho, W. H., Lee, S., Kim, C.	Outpatients	537	Self-administered questionnaire	30	7-point Likert scale (1 = strongly disagree and 7 = strongly agree)	Factor analysis
Verhoef, P. C., Antonides, G., DeHoog, A. N.	Inbound calls		Telephonic questionnaire		5-point Likert scale (very unpleasant-pleasant, very dissatisfied-satisfied)	Regression analysis
Raajpoot, N.		222	Focus group and then mail survey	24		Item response theory, EFA, CFA and conjoint analysis
Pakdil, F., Harwood, T. N.	Preoperative patients and their family members	669	Questionnaires	22	Three for expectations (very important, important, not important), perceptions on 5-point Likert scale (1 = excellent, 2 = very good, 3 = good, 4 = fair, 5 = poor)	
Rao, K. D., Reters, D. H., Roche, K. D.	Inpatient and outpatient	1,837 outpatients and 611 inpatients	Questionnaire	16	5-point Likert type scale (Pictorial money scale one rupee = completely agree, 75 p = agree, 50 p = neither agree nor disagree, 25 p disagree, zero paise = completely disagree)	PCA and regression
Mostafa, M. M.	About to be discharged patients	332	Questionnaires	22	5-point Likert type scale (strongly disagree to strongly agree)	PCA, discriminant analysis, ANOVA

Olorunniwo, F., Hsu, M. K., Udo, G. F.	Employees of major corporations, state and federal government establishments and MBA students	311	Questionnaire	29	7 -point Likert scale (1 = strongly disagree to 7 = strongly disagree)	Focus group and WTA, EFA and CFA
Rohini, R., Mahadevappa, B.	Patients and management	500 patients (100 from each hospital), 40 responses from management	Questionnaire	22	7-point Likert scale	GAP score
Teng, C. I., Ing, C. K., Chang, H. Y., Chung, K. P.	Patients admitted in surgical wards	271 (253)	Questionnaire	47	5-point Likert scale (strongly disagree to strongly agree)	Factor analysis
Dagger, T. S., Sweeny, J. C., Jhonson, L. W.				1353		Four focus group interviews, mail survey, standard content analysis procedure
Piligrimiene, Z., Buciuniene, I.						
Chowdhury, Md. M. U.	Patients and their guardians. Management personnel	1,100 patients. 800 management personnel	Questionnaire	21	7-point Likert scale	GAP score
Fowdar, R. R. R.	Patients and family members having visited GP in 1 year	260	Questionnaire	47	7-point Likert scale	Factor analysis and linear regression
Duggirala, M., Rajendran, C., Ananthraman, R. N.	Patients undergone medical treatment and hospital stay in the recent past	100	Questionnaire	86	7-point Likert scale	CFA. bivariate correlations. Multiple regression analysis

(Table A2 Continued)

(Table A2 Continued)

Author	Types of Respondents	Sample Size	Method of Data Collection	No. of Items Used	Scale	Analytical Technique
Aagja, J. P., Garg, R.	Patients and attendants	200	Questionnaire	24		CFA
Kheng, L. L., Mahamad, O., Ramayah, T., Mosahab, R.	Customers of 10 banks	238	Questionnaires		7-point Likert scale (1 = strongly disagree, 7 = strongly agree)	Regression
Mosahab, R., Mahamad, O., Ramayah, T.		147	Questionnaire			Linear Regression
Otani, K., Waterman, B., Faulkner, K. M., Boslaugh, S., Dunagan, W. C.	Discharged (7–14 days)	4,230	Telephonic interview		5-point Likert scale	Regression
Ravichandran, K., Mani R. T., Kumar, S. A., Prabhakaran, S.		300	Questionnaire			Regression
Santouridis, I., Trivellas, P.	Random intercepts on streets and shopping centres	205	Interviewer administered questionnaire			Multiple Regression
Sivakumar, C. P., Srinivasan, P. T.	Patients and patient's attendants	472		22	7-point Likert (strongly agree to strongly disagree)	Multiple regression
Brahmbhatt, M., Baser, N., Joshi, N.		246	Questionnaire	41	Modified SERVQUAL scale	
Prakash, A., Mohanty, R.	Discharged patients and attendants	169	Questionnaire	26	7-point (1 = very low, 7 = very high)	Factor analysis and artificial neural networks
Altuntas, S, Dareli, T., Yilmaz, M. K.	Discharged (IPD)	281	Questionnaire		5-point Likert scale	AHP and ANP
Arun Kumar, G., Manjunath, S. J., Chethan, K. C.	Discharged	185	Questionnaire		5-point Likert scale	*t*-test, regression analysis
Senic, V., Marinkovic, V.	OPD patients	152	Questionnaire	18	7 point (1 = completely disagree, 7 = completely agree)	PCA, SEM

Zarei, A, Arab, Md., Froushani, A. R., Tabatebaei, S. M. G.	Discharged	983	Questionnaire	21		Factor Analysis
Ramez, W. S.	Discharged (within 1 year)	235	Questionnaire			Factor analysis, regression and correlation
Chahal, H., Kumari, N.	Discharges (IPD)	400	Schedule	62	5-point (5 = strongly agree, 1 = strongly disagree)	Hierarchical approach
Chang, C. S., Chen, S. Y., Lan, Y. T.		285	Questionnaire		5-point (5 = strongly agree, 1 = strongly disagree)	SEM
Purcarea, V. L., Gheorghe, I. R., Petrescu, C. M.	Discharged patient	183	Questionnaire (e-mail)	22	5-point (5 = strongly agree, 1 = strongly disagree)	
Naik, J. R. K., Anand, B., Bashir, I.	Admitted patients for more than 2 days	145	Questionnaire	24 (16 SERVQUAL and others)	5-point Likert scale	Regression and correlation
Amin, M., Nasharuddin, S. Z.	Admitted patients for more than 1 day	216	Questionnaire		7-point (1 = strongly agree, 7 = strongly disagree)	CFA, SEM
Krishnamoorthy, V., Srinivasan, R.	Discharged	197	Questionnaire through (e-mail or by post)	30		EFA, multiple regression
Dheepa, T., Gayathri, N., Karthikeyan, P.		286	Interview schedule	23		Factor analysis and multiple regression
Satsanguan, L., Fongsuwan, W., Trimentsoontron, J.	Discharged Patients and their relatives	219	Questionnaire	20	7-point (1 = strongly agree to 7 = strongly disagree)	EFA, CFA, SEM
Thiakarajan, A., Krishnaraj, A. S. R.						
Venkateshwarlu, P., Ranga, V., Sreedhar, A.	Patients and visitors	300	Questionnaire	22	5-point (very important, important, moderately important, less important, unimportant)	Regression and correlation

(Table A2 Continued)

(Table A2 Continued)

Author	Types of Respondents	Sample Size	Method of Data Collection	No. of Items Used	Scale	Analytical Technique
Izogo, E. E., Ogba, I. E.		384	Questionnaire	32 (22 Service Quality, 5 Customer Satisfaction, 5 Loyalty)	7-point (7 = very strongly agree, 1 = very strongly disagree)	PCA
Mohamed, B., Azizan, N. A.	Discharged patients (not more than 12 months)	235	Questionnaire	35	5-point (1 = strongly disagree to 5 = strongly agree)	PLS-SEM
Kondasani, R. K. R., Panda, R. K.	Patients visited	475	Questionnaire	55	5-point (5 = strongly agree to 1 = strongly disagree)	Focus group (for questionnaire design) factor analysis, regression and correlation
Bahadori, M., Raadabadi, M., Ravangard, R., Baldacchino, D.	Admitted patients	385	Questionnaire	30	5-point (1 = strongly disagree, 5 = strongly agree)	CFA
Jandavath, R. K. N., Byram, A.	Admitted patients	493		28		SEM
Pai, Y. P., Chary, S. T.	Family, relatives and friends who had visited the hospital known to researcher		Focus group followed by questionnaire	66	10-point (1 = not relevant at all and 10 = very relevant)	
Pramanik, A.	Admitted and discharged	368	Questionnaire	22		
Irfan, S. M., Ijaz, A., Farooq, M. M.	Discharged and OPD	369	Questionnaire	22		SEM

Source: The authors.

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