

Healthcare service quality-measurement models: a review

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Abstract

Purpose – The purpose of this study was to review existing healthcare service quality-measurement models.

Design/methodology/approach – A review of the literature was conducted utilizing keywords “healthcare”, “service quality”, “measurement models”, “SERVQUAL”, “SERVPERF”, “HEALTHQUAL”, “PubHosQual” and “HospitalQual”. These investigations were selected from the “Emerald”, “ABI/Inform”, “ScienceDirect” and “EBSCOhost” databases. A range of studies used in the makeup of the healthcare quality-measurement model for a 36 years period (1979 to 2015) were examined in an exhaustive survey of the literature. Of 137 studies reviewed, 74 studies were selected for analysis.

Findings – As yet, no consensus has been reached among scholars on the definition and indicators and factors of the quality of the healthcare services. Moreover, most of the current models are of Western origin and incongruent with the cultural and economic contexts of developing countries. The previous studies create scales resembling the generic measures of service quality, which may not be completely appropriate for assessing the perceived quality of healthcare services. Furthermore, previous studies were too narrow, overemphasizing the quality of healthcare only as far as the functional aspect of the services were concerned and paying too little attention to the technical aspects, using the experience of healthcare providers. These results have much room for failures. This is therefore advising healthcare organizations that need to develop their own models for measuring the quality of their services.

Originality/value – Generic models no longer suffice in measuring the quality of healthcare services. Developing countries should try and develop their own models for measuring the quality of healthcare services.

Keywords Healthcare service quality, Measurement models

Paper type General review

Introduction

This paper contains a review of the concept of quality and healthcare quality-measurement instruments (frameworks and/or models) and also uncovers some of the problems with regard to healthcare quality measurement.

Concept of quality

Quality as a concept seems to vary both in definition and in understanding. Even well-known authors define quality in different ways. The concept of quality has been one of the most debated subjects in the literature on services. The reason for this is a lack of consensus on how to define it [1, 2].

Some of the influential contributors and thought leaders defined quality as follows: Crosby’s [3] definition focused entirely on quality as conformation to specification, while Deming [4], Feigenbaum [5] and Ishikawa [6] defined quality as products and services that need to satisfy customers in accordance with their needs and expectation. Juran’s [7] definition however incorporated both specification and customer satisfaction simultaneously.



The distinct healthcare characteristics such as intangibility, heterogeneity and simultaneity make it difficult to define and measure quality [8–11] and the complex nature of healthcare, the different interests of healthcare providers in delivering healthcare services and the requirement of ethical considerations when subjected to a problem [12–14]. It was also added that due to the difference in background, experience, skills and personal characteristics of healthcare professionals, the service provision for a patient varies [8, 10].

Healthcare services are created at the same time and utilized and cannot be put away for later consumption.

Stakeholders in healthcare have different views, interests and meanings, and according to Joss and Kogan [8], McLaughlin and Kaluzny [10] and Naveh and Stern [11], healthcare service quality, as a result of its intangibility, relies upon the healthcare service process, patients and healthcare provider interactions. Quality of healthcare, therefore, needs a multidimensional definition that incorporates the different views of healthcare stakeholders.

There have been disagreements among recipients, medical staff members and policy-makers about what is quality in healthcare [2]. Even though fragmentary attempts have been made to adopt the quality of healthcare service indicators, they remain general features, imperfect and may not completely meet one's specific requirements [1].

Those discrepancies can be mitigated by integrating different functions and role-players' thinking and design in order to achieve better healthcare services [15].

Researchers such as Crago [16] and Hsieh [17] also advocated for developing an integrated instrument to overcome the existing flaws in healthcare services. They were interested in a model that systematically integrated and synchronized managerial and medical inputs-processes-outputs to ensure that the organizational objectives are realized. These should be the point of departure for all quality development [18].

This study will, therefore, argue the importance of understanding those fragmented, disorganized and unaccountable variables and make changes to their integration so as to have an appropriate quality-measurement instrument for improving the quality of healthcare services.

Models for measuring the quality of healthcare services

This section addresses how the quality of healthcare services has been measured and the models used for measuring the quality of healthcare services. There are five models identified for measuring the quality of healthcare services, namely, Donabedian's, SERVQUAL, HEALTHQUAL, PubHosQual and HospitalQual models.

Donabedian's model. Donabedian, the developer of the Model of Care [19, 20], is recognized as the first person to have made a study of quality in healthcare. Specifically referring to healthcare services, Donabedian [21] stated that the possibility of quality of healthcare improvement depended on both the technical and interpersonal quality of healthcare services. Technical care is about the medical treatment aspects of patient care, while interpersonal care is about communicating with the patient about his or her treatment.

Similarly, Zarei, *et al.* [22] stated that technical quality puts the emphasis on skills, the accuracy of practices and procedures and medical examinations, while functional or process quality looks more at the methods through which the services are delivered to patients.

It is generally agreed that the quality of healthcare services should be measured using the viewpoints of main stakeholders such as users, healthcare providers, payers for the services, politicians and managers of health and against explicit criteria reflecting the values of a given society [23, 24].

Donabedian [21] proposed using a set of three connected items together, namely, structure, process and outcome to measure the quality of healthcare service. Accordingly, he defined structure as the settings, qualifications of providers and managerial systems through which

healthcare can take place. Whereas the process is the activity put into healthcare practice, and outcome refers to returning to its initial position or survival of the patients.

Donabedian's model comprises the following seven dimensions as a tool for measuring the quality of the healthcare services: efficacy, effectiveness, efficiency, optimality, acceptability, legitimacy and equity [20].

Applications of SERVQUAL to healthcare. SERVQUAL is a famous model [25]. Despite controversies about the validity and reliability of this model [26, 27] with or without modification, it is commonly applied in healthcare services. Despite SERVQUAL's popularity, some authors have developed their own tool for measuring the quality of services, tailored for their research objectives.

Carman [28] identified different dimensions while using the SERVQUAL model for measuring the quality of healthcare services in a study relating to hospitals. Nine dimensions were found, namely, admission service, tangible accommodation, tangible food, tangible privacy, nursing care, explanation of treatment, access and courtesy afforded to visitors, discharge planning and patient accounting.

Brown and Swartz [29] assessed medical services from the perspective of the healthcare provider and patients using a gap score and disclosed that physician interaction was the most important indicator which satisfied patients.

Tucker and Adams [30] used four dimensions (caring, empathy, reliability and responsiveness) for measuring the quality of hospital services in the USA in their study.

Jabnoun and Chaker [31] compared the quality of service perceptions of patients in private and public hospitals in the UAE. The authors found five dimensions, namely, reliability, responsiveness, supporting skills, empathy and tangibles for comparing service-quality perceptions in private and public hospitals. They found a significant difference between these hospitals in all dimensions except the supporting skills dimension.

Sohail [32] assessed the quality of services delivered to patients by private hospitals in Malaysia and found that perceptions exceeded expectations in all dimensions.

Boshoff and Gray [33] operationalized the quality of service by seven dimensions, namely, communication, tangibles, the empathy of nursing staff members, assurance, the responsiveness of administrative staff members, security and physician responsiveness.

Iyer and Muncy [34] used the dimensions of SERVQUAL for comparing patients' trust in different groups. It found that the high-trust groups were very concerned about reliability and responsiveness while the low-trust groups were more in favor of empathy and tangibles.

Herstein and Gamliel [35] dealt with the quality of health-maintenance organizations. The perceptions were not only restricted to the five dimensions of SERVQUAL but also an additional dimension, namely the emergence of a private-branding dimension.

Ramsaran-Fowdar [36] identified three dimensions, namely, reliability and fair and equitable treatment as the most important dimensions used for measuring the quality of healthcare services using a modified SERVQUAL scale.

Babakus and Mangold [37] tested the appropriateness of SERVQUAL to the healthcare sector and found that SERVQUAL was valid and reliable with respect to the functional quality of services in hospitals. However, for long-term success, hospital managers have to include the technical quality aspects of services in hospitals.

Carman [28] suggested requirements for the modification of items in SERVQUAL for each industry.

The above were all cases where the SERVQUAL scale was modified and its application differed from one context to another. Babakus and Boller [38], on the other hand, emphasized the requirement of industry-specific dimensions for measuring the quality of healthcare service, and Brown *et al* [39] discovered some problems with SERVQUAL and suggested that there should be a new method with psychometric properties that would need context-based studies and would incorporate both functional and technical quality aspects of healthcare organizations.

HEALTHQUAL model. Although Parasuraman *et al.* [40], stated that the SERVQUAL model was applicable to most service industries, scholars such as Black [41], Camilleri and O'Callaghan [42] and Juwaheer and Kassean [43] argued for and developed, a framework specifically for the healthcare sector. In this respect, the work of Donabedian [44] was very helpful, with respect to structure, process and outcomes and was used as a basis for developing quality in healthcare dimensions.

According to Camilleri and O'Callaghan [42], Donabedian's [24] model for hospital services allowed for the development of a comprehensive model for measuring the quality of healthcare services in a study of hospitals in Malta. These aspects identified six major dimensions, namely, (1) admission processes, (2) attitudes of medical staff (doctors), (3) attitudes of nursing officers, (4) ward/hospital environment, (5) patients' amenities/facilities and (6) discharge planning and coordination.

The work of Donabedian [44] and Camilleri and O'Callaghan [42] provided valuable insight into what was required for service standards in hospitals.

Drawing on the works of Donabedian [24] and Parasuraman *et al.* [40], Camilleri and O'Callaghan developed a model called HEALTHQUAL. HEALTHQUAL is an adaptation of SERVQUAL. It also incorporated the applicable aspects of service quality acknowledged in the literature and then applied them to the healthcare services. The model has six major dimensions as listed above by Donabedian.

PubHosQual model. The public-hospital service-quality (PubHosQual) model was developed from the patients' perspective [45]. The model was developed to measure the quality of public hospitals in India using 24 items grouped into five dimensions of hospital service quality. The dimensions are admission, medical service, overall service, discharge and social responsibility. The model was used to identify where specific improvements were required and were then modified.

According to Ovretveit [46] and Kilbourne, Duffy and Duffy and Giarchi [47], the factor structure for the hospital sector differs from country to country. Hence PubHosQual provided a theoretical contribution grounded in the Indian public context. Unfortunately, that model did not incorporate the technical aspects of healthcare services.

HospitalQual model. Based on an unfulfilled scale, Itumalla, *et al.* [48] developed a model called HospitalQual by adopting the disconfirmation paradigm of the SERVQUAL model [40]. The model was developed particularly for monitoring, controlling and improving the service quality for in-patients in a public hospital in Hyderabad, India. The HospitalQual model was useful for hospital managers to monitor, control and improve the quality of services to in-patients only. This has its limitations.

Summary regarding the models used for measuring the quality of healthcare services. Some authors used only generic models (SERVQUAL and SERVPERF). There is evidence indicating that a number of researchers have adapted and developed the generic service-quality models in accordance with the context of their particular healthcare services.

Methodology

This study used a qualitative research design. The research instrument was an in-depth literature review. The study was initially investigated through a comprehensive review of the extant literature regarding models that comprised factors and indicators of healthcare service quality. The overall purpose of this instrument was to assess the existing healthcare quality, measuring models.

A review of the literature was conducted utilizing keywords such as "healthcare", "service quality", "measurement models", "SERVQUAL", "SERVPERF", "HEALTHQUAL", "PubHosQual" and "HospitalQual". These studies were selected from well-known databases – such as "Emerald", "ABI/Inform", "ScienceDirect" and "EBSCOhost". A range

of studies dating from 1979 to 2015 that had been incorporated into the healthcare quality-measurement model was reviewed. As sources were reviewed, additional citations were found and explored. The search resulted in 137 refereed articles and books of which 106 were used. These articles were selected based on their content such as healthcare service quality models, factors and indicators of factors of quality in the healthcare service.

Results

A variety of models, factors and indicators were generated by reviewing and synthesizing the past literature on the quality of healthcare services. The review and synthesis of the extant literature identified five major models. These models have been used for measuring the quality of healthcare services, namely, Donabedian's, SERVQUAL (SERVPERF), HEALTHQUAL, PubHosQual and HospitalQual models.

The review was in favor of finding an appropriate tool for measuring the quality of healthcare services that would be in accordance with the unique nature of the services in each country. It was confirmed in the literature that every country, and even every healthcare service organization, should have its own framework for measuring the quality of healthcare services.

The previous studies create scales resembling the generic measures of service quality, which may not be completely appropriate for assessing the perceived quality of healthcare services. Furthermore, previous studies were often too narrow, overemphasizing the quality of healthcare only as far as the functional aspect of the services were concerned and paying too little attention to the technical aspects, using the experience of healthcare providers.

The quality of healthcare services is determined not by only external customers (patients) but also by internal customers (employees). Donabedian [19], Gronroos [49] and Zarei *et al.* [22] supported this idea of functional (external) and technical (internal) customers. Hence, input generated from both groups was vital for building an appropriate framework for measuring the quality of healthcare services.

It was shown in this study that although there are already many models for measuring the quality of service, few of the studies were conducted in a developing country. As such quality-measurement instruments developed by the Western world may not necessarily be congruent with healthcare services in developing countries.

The existing Western frameworks and tools are incongruent with the healthcare context of developing countries because of internal and external dimensions. The type of business and its culture, the legislative and strategic direction of the government and role-players, the absence of motivations and ethical challenges are identified as external determinants, while a lack of appropriate leadership, accountability (managerial, operational and public), ownership, supervision, monitoring and communication of quality at all levels and to interested groups are identified as internal determinants [50].

In conclusion, generic models are now insufficient for measuring the quality of healthcare services in all regions. Developing countries should develop their own model for measuring the quality of healthcare services [51].

Discussion

Despite many efforts and arguments, an agreement has not yet been reached on how to measure the quality of services across industries. In order to address this issue, several models were developed.

There were different concepts of the dimensions of service quality in various sectors, as evidenced by the various definitions given to different variables and, at times, the same dimension defined differently across sectors. For instance, the variable "integrity" appeared

in many studies but did not define the same attribute across most of these studies. This further reinforced the viewpoint that service quality tended to be context-bound and depended on the type of service [52]. In effect, the authors claimed that the models that they developed were reliant on the specific service being offered.

Within the healthcare environment, the arguments of whether the gap scores and the five SERVQUAL dimensions were applicable across industries and within the healthcare environment became the main reasons why many researchers embarked on reconstructing the instrument in the healthcare context.

The three service-quality measurement models, namely, Gronroos, SERVQUAL and SERVPERF, were applicable to most service sectors, including healthcare services. However, Piligrimiene and Buciuniene [2] argued that healthcare service quality had been debatable for many years, resulting in questions about what constituted healthcare service quality and how it was perceived by different stakeholders.

The consensus was that healthcare service quality was a complex and multidimensional concept [23, 53] and that there was no one uniform way of defining it.

Because of the absence of an appropriate objective measurement of healthcare, researchers developed the HEALTHQUAL [42], PubHosQual [45] and HospitalQual [48] models adopting the disconfirmation paradigm of the SERVQUAL model [40]. These models were devised to minimize the differences in the factor structure that help researchers address the service-quality measurement gap in their healthcare service contexts.

Contrasted with SERVQUAL, the primary benefit of PubHosQual for public hospitals was related to its content validity. According to Babakus and Boller [38], SERVQUAL was criticized for the weakness of its indicator loadings. For instance, nine of the 22 variables had scored loadings below the recommended value of 0.5 [54]. For the PubHosQual variables, on the other hand, the loadings of indicators were between 0.512 to 0.918, which was more satisfactory than in the case of SERVQUAL [45].

What was striking about the PubHosQual scale, was that four out of the five dimensions of SERVQUAL were correlated with the overall service dimensions of PubHosQual. This matched the criticism against SERVQUAL as these models interrelate in its factors and indicators. Except for the social responsibility dimension, which was correlated with the assurance and empathy dimensions of SERVQUAL, the remaining dimensions were completely independent of the dimensions of SERVQUAL. This was another advantage of PubHosQual, which clearly took into consideration the peculiarities of service quality in the hospital sector.

For example, the dimensions of admission and discharge (correlation coefficients less than 0.3) were fully omitted from SERVQUAL. Furthermore, a comparison of PubHosQual and SERVQUAL as far as their respective reliabilities and validities were concerned showed that all the dimensions of PubHosQual were more reliable than those of SERVQUAL.

However, one criticism of PubHosQual was that it was based on a study of one public hospital in India where the respondents predominately came from the lower-middle- or middle-income social classes. It lacked an in-depth study that could assess different demographic variables in order to understand the perceived service quality. As a result, it might be difficult to use this model for different cultures and environments.

Criticism against the use of HEALTHQUAL was that the study was limited to one specific hospital in Malta and could not be extended to other contexts due to the differences in culture, economy and environment. Moreover, Miranda, *et al.* (55) stated that HEALTHQUAL was developed to measure functional quality only – that is, only the manner in which healthcare services were delivered to the patient.

However, a lack of emphasis on technical quality would not bring long-term success [55]. Miranda also summarized that in order to be successful in the long term, healthcare organizations needed to pay attention to both functional and technical quality. It was

therefore understandable that the dimensions of quality and an approach to the measurement of healthcare service quality are still not settled upon.

It can be seen that the unique nature of a particular environment might not be correctly embodied in the models. SERVQUAL (including HEALTHQUAL, PubHosQual, and HospitalQual – all adaptations of the SERVQUAL model) and SERVPREF can be deemed as lacking in a precise outlook and their applicability might create some problems in the gauging of service quality. Thus, they could have limited practical usage. This led to a need to develop a model that could measure service quality in a particular environment. In other words, the framework had to be principally derived from the realistic environment from where the problem had occurred.

According to Padma *et al.* [23], quality of service quality dimensions need to be developed by using patients and other stakeholders and based on models' other than SERVQUAL in order to achieve organizational objectives. These authors added that patients are not always the ones who decide on the quality of healthcare services because it is the physician who often mentions the required input in order to treat patients being cured of their illness.

According to Ovretveit [56], patients are usually not strong physically and psychologically when receiving healthcare services. Because of a high degree of intangibility involved in the provision of care and because a high degree of professionalism, physician specialization, skills, demands and healthcare services are difficult to assess. Moreover, managers also have a paramount role to play in setting standards for efficient (i.e. without waste and following higher-level regulations) service provision. Dagger *et al.* [53] also found and supported the fact that administrative qualities have the greatest impact on service-quality perceptions.

Habbal [57] and Ladhari [58] no longer supported the SERVQUAL scale as a great deal remains to be addressed and learned about the patient–physician relationship. Pai and Chary [59] also arrived at a judgment that researchers needed to investigate the quality of healthcare dimensions instead of adopting the existing dimensions, thus drawing attention to the need for an appropriate scale for measuring the quality of healthcare services.

Byju and Srinivasulu [60] also clearly stated that the technical aspect of the service provided is often without the knowledge of the patient.

The other important element of this study is to understand the opinion of the stakeholders (namely, healthcare providers, patients, managers and support staff members), as all of them together will make a greater contribution toward developing a better-quality model for measuring healthcare services.

According to Piligrimiene and Buciuniene [2] and Gomes *et al.* [50], the disagreement among recipients, medical staff members and policymakers regarding the dimensions of quality specifically in healthcare, continued to be of an ambiguous nature. Even though fragmentary attempts had been made to adopt hospital-quality criteria, they remained general attributes that were flawed and did not fully meet the specific requirements for an integrated model [1].

According to Longbottom and Hilton [15], those quality-improvement discrepancies could be mitigated by integrating the different functions and the thinking and design of role-players in order to achieve better healthcare services. Mosadeghrad [61] also supported the fact that the perspectives and priorities of healthcare stakeholders must be taken into account.

Researchers such as Crago [16] and Hsieh [17] also advocated for bringing together an integrated quality-management model and tools for overcoming the inherent flaws in healthcare services. They were interested in a model for systematically integrating and synchronizing clinical and non-clinical aspects to ensure that the organizational goals are met.

This study, therefore, argues for the importance of understanding those fragmented, disorganized and unaccountable variables and making changes in their integration so as to have a better quality-measurement framework for healthcare services.

According to Sohail [32], professionals, support staff members and stakeholders have to contribute their views, acting in synergy, so that those views may be applied in order to give external and internal customer satisfaction.

Ovretveit [56] distinguished between three dimensions of quality, namely, patient quality (i.e. functional quality), professional quality (i.e. technical quality) and management quality (i.e. the standards for providing services in an efficient manner without waste and following higher-level regulations).

Zarei *et al.* [22] stated that as most patients lack the knowledge required for assessing the technical quality of healthcare services, their assessment of the quality of service was consequently and inevitably shaped by the non-clinical or functional aspects.

According to Yesilada and Direktr [62], studies show that patients are more willing to assess the quality of service based on functional features such as the space between physicians and physician relationships with the patient than they are to evaluate quality based on technical and clinical aspects.

Roberge *et al.* [63] stated that the patients' perspective is on non-clinical quality services rather than technical quality services.

Zarei *et al.* [22] added that most of the time, patients cannot understand the diagnosis given by the doctor and nurses, meaning that the opinions of the doctor and nurses are also important when formulating the attributes of healthcare services.

All these advocate that the opinions of all the important stakeholders, namely, patients, healthcare professionals, managers and support staff members, need to be taken into account when identifying the key service-quality attributes. Distinguishing between the technical and the functional quality of healthcare services may lead to different outcomes. Thus, a combination of representatives, namely, patients, healthcare professionals, support staff members and managers, could suffice for proposing an appropriate framework for measuring the quality of healthcare services.

On the other hand, the adaptation and adoption of frameworks for measuring the above in themselves had repercussions in different contexts [28, 64]. Hence, there appeared to be a need to pay attention to the context.

The situation shows that the generic measures of service quality (e.g. SERVQUAL and SERVPERF) might not be completely adequate instruments with which to assess the quality of healthcare, although their effect on how to measure the quality of services was undeniable.

For instance, the healthcare system of the developed world, which had shown much more progress as far as quality was concerned, still requires improvement in order to reduce mortality and morbidity because of over-use, under-use or misuse of delivery [65]. As a developing continent, Africa had an opportunity to learn from the mistakes made in the developed world in that they could have acted early before the growing mismatch of approaches began.

Instead, the continent adopted and implemented the approaches of the developed world without any modification [66]. Despite the appeal of these approaches, considerable limits and barriers to their successful implementation existed. These stumbling blocks were caused by variations in culture and economic influences [67, 68] and became an additional burden for the continent. This was the era of "all things to all people" and "one-size-fits-all", as it became a standardized framework for undifferentiated customers that was no longer realistic.

The literature uncovered indicators and factors that could help to measure how the quality of one culture differs from another culture and similarly varies from one organization to another [69–71].

Malhotra *et al.* [72] noted the need for a comparative assessment of the dimensions of the quality of service of developed and developing countries, as well as of different cultures. Malhotra *et al.*'s [72] proposition was repeated by Gomes *et al.* [50] and Zineldin [73] in their comment that models for measuring the quality of healthcare applied in the West were not necessarily applicable in developing countries.

The above implies that the model developed by the Western world may not necessarily be congruent with those needed for measuring the quality of services in developing countries. This also applies to healthcare services. Thus, the emphasis is beginning to shift to the specific healthcare settings of developing countries in order to generate applicable instruments [69–71].

Despite the fact that the significance of quality may be universal, its development and application represent each country's particular context of healthcare services [60].

According to Lonial *et al.* [74] despite recognizing this particular need, this gap in the literature, with a few exceptions, continued to exist in 2010 (the year they published their research findings).

This discrepancy implies that a great deal remains to be known and explored about improving the quality of healthcare in its real and specific environment.

Conclusion

The previous studies were too narrow, overemphasizing the quality of healthcare only as far as the functional aspect (external customers-patients) of the services were concerned and paying too little attention to the technical aspects (internal customers-employees). Hence, inputs generated from both groups were vital for building an appropriate framework for measuring the quality of healthcare services.

The existing Western frameworks and tools are incongruent with the healthcare context of developing countries because of the cultural and economic differences. The review was in favor of finding an appropriate tool for measuring the quality of healthcare services that would be in accordance with the unique nature of the services in the country. It was confirmed in the literature that every country, and even every healthcare service organization, should have its own framework for measuring the quality of healthcare services.

Moreover, there should also be a continued effort to redefine the quality measure further and to study the complex issues of service quality in the healthcare setting.

In general, generic models are no longer sufficient for measuring the quality of healthcare services. It is recommended then that developing countries should develop their own models for measuring the quality of healthcare services.

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