Measurement of Quality of Hospital Services via SERVQUAL Model

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Abstract :Hospital performance has emerged as a key policy and planning concern. The aim of this study was to determine the different dimensions of service quality in hospitals of Iran and evaluate the service quality from patients' perspective. **Methods:** A cross-sectional study was conducted during November and December 2012. The study sample was composed of 385 patients randomly selected from 3 general teaching hospitals in Arak, Iran. SERVQUAL questionnaire which covers service quality dimensions was employed to collect data. **Results:** The gap in quality dimensions was indicated between patients' perceptions and expectations: Responsiveness: -1.80, Empathy: -1.36, Assurance: -1.28, Reliability: -1.69, and Tangibles: -1.86. The highest expectation and perception were related to the responsiveness dimension while the lowest expectation and perception were related to the reliability dimension. **Discussion:** Rearranging and deploying better facilities and equipment and service delivery in order to reduce the gap between patients' perceptions and expectations may be helpful. The results of this study demonstrated that SERVQUAL is a useful instrument to monitor and measure the quality of hospital services in a developing country.
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1. Introduction

Evidence from both production and service organizations indicate that service quality becomes increasingly important for today's business, particularly in high-customer involvement industries such as healthcare and financial services (Anderson and Zeithaml, 1984; Taheri et al., 2013). Two types of quality are considered in service organizations: technical quality and functional quality (Carman, 2000). Technical quality or, in fact, quality in health services is determined by properness of diagnosis and medical procedures (JCAHO, 1987). Functional quality, on the other hand, refers to the way in which health services are delivered to clients (Bopp, 1990). In order to assure that medical procedures are effective not only from the experts' viewpoint (technical quality) but also in terms of having the ability to satisfy the functional quality, patients' expectations must be considered in health services delivery. Thus, it is necessary to evaluate services implicitly and explicitly based on consumer's viewpoints (Hamidi, 1998). Consumer satisfaction can be measured by comparing patients' expectations and perceptions of the provided services. If the services provided are more than their expectations, those services are considered excellent. When consumer's expectations and perceptions are congruent, the services quality is satisfactory and consumer satisfaction is crucial for success of any organization. Hence, it can be argued that a quality orientation is more important in this sector than other sectors (Fitzsimons and Fitzsimons, 2001). Evidence suggests that perceived quality is the most important factor affecting the consumer's satisfaction which in return, affects patients' intentions to use products and services in the future (Zeithaml, 1988). Therefore, considering patients' perceptions of service quality is of critical importance. Although different attempts have been made to measure the quality of services, there is no general agreement on how this concept should be measured. A questionnaire has been designed in order to examine all service quality dimensions in SERVQUAL model (Zeithaml et al., 1988; Brooks et al., 1999; Chaston, 1994; Reynoso and Moore, 1995; Edvardsson et al., 1997; Lings and Brooks, 1998; Sahney et al., 2004). This approach starts from the assumption that the level of service quality experienced by customers is critically determined by the gap between their expectations of the service and their perception of what they actually receive from a specific service provider (Zeithaml et al., 1990). The aim of this study was to determine the different dimensions of service quality in hospitals of Iran and evaluate the service quality from patients' perspective.

2. Materials and Methods

2.1. Methodology

This descriptive study was carried out in 2012 using a cross-sectional analysis.

2.2. Research population

The research population of this study included patients who were hospitalized in three university hospitals (Vali-Asr, Amir Kabir, and Amir Alomomenin Hospitals).

2.3. Sampling

To calculate the sample size, the initial study was carried out on a sample of 35 patients, using variance of difference between patients' expectations and perceptions scores ($a = 0.05$; evaluation accuracy of $d = 0.15$). A total of 385 patients were determined as the study sample. To distribute the sample size across the three hospitals, estimation was achieved to determine the total number of the studied population in 2012 based on hospital records related to the patients who were hospitalized in these three hospitals. Following this, the sample size was determined as 118, 119, and 148 for Vali-Asr, Amir Kabir, and Amir Almomenin Hospitals, respectively. To collect data, the researcher sought permission from the related authorities and obtained ethical approval following which a questionnaire was distributed to literate patients who were discharged from the hospital on that day or those who were scheduled for discharge. The researcher requested that the patients complete the questionnaires. Illiterate and under literate patients were interviewed by the researcher and their responses were entered in the questionnaires.

2.4. Instrument

The SERVQUAL model was used for quality assessment which consists of five gaps, including:

1) The differential between senior management perceptions of customer's expectations and what those expectations actually are.

2) The differential between senior management perceptions of customer's expectations and the translation of these perceptions into meaningful service quality specifications and performance standards.

3) The differential between service standards set and their actual delivery on a day-to-day basis.

4) The differential between what is actually delivered and what has been promised in external communications to customers.

5) The differential between customer's perceptions and expectations (P-E) as mentioned above.

The SERVQUAL instrument has been the predominant method used to measure consumers' perceptions of service quality. It has five generic dimensions (Van Iwaarden et al., 2003):

1) Tangibles: Physical facilities, equipment and appearance of personnel.

2) Reliability: Ability to perform the promised service dependably and accurately.

3) Responsiveness: Willingness to help customers and provide prompt service.

4) Assurance: Competence, courtesy, credibility, security, knowledge and courtesy of employees, and their ability to inspire trust and confidence.

5) Empathy: Access, communication, understanding the customer, caring, and individualized attention that the firm provides to its customers.

The standard SERVQUAL Questionnaire in its initial format includes 22 pairs of questions, half of which measure the perceived level (existing level) of service quality offered by the organization. The remainder measure the expected level (a level of service in which consumers think should be received from service providers or desirable or ideal level) of service. The questionnaire consisted of four parts.

Demographic questions were elicited in the first part with the second part including 22 questions about the patients' expectations of ideal hospital services. A further 22 questions were included in the third part of the questionnaire which asked about the patients perceptions of hospital services. Lastly, the fourth part consisted of a table with five dimensions of service quality where respondents were asked to indicate on a scale the relative importance they attach to each one. Reliability of the instrument was studied using split-half method. This method is the most frequent method used to assess reliability. Under this method, the research instrument is administered to a group of respondents and then the items are split in half, for example odds and evens, for the purpose of scoring. The correlation between the two halves of the test, however, is a measure of the reliability for each half of the test rather than the total test as correlations on fewer items are usually less than those on more items. Thus, a statistical correction should be made so that the researcher can get an assessment for the whole test, not just for the odd or even questions of the test. This procedure is known as the Spearman-Brown prophecy formula (Carmines and Zeller, 1979).

2.5. Analysis

Following the collection of the questionnaires, the data were extracted and the obtained information was analyzed. To analyze data, descriptive statistical methods such as tables, graphs, and indexes calculation were used.

3. Results

This study was performed on 385 patients in teaching hospitals of Arak University of Medical Sciences. Average age of the study sample was 37.99 ± 15.86 and average length of hospital stay was 4.59 ± 2.91 days. As presented in Table 1, 54.3% were male and 54.3% of the participants had education higher than diploma.

3.1. Lowest mean expectation scores

Vali-Asr Hospital survey yielded low expectations in reliability of services. This may be due to the fact that patients did not find themselves eligible to judge on the technical aspects of care and probably perceived the reliability of medical services as an inseparable part of services. Patients treated in Amir Almomenin Hospital had low expectation on staff ability to attract patients' confidence and trust. This might be explained by cultural characteristics due to the fact that medical practitioners hold a special position with people respecting and trusting of them. Amir Kabir Hospital patients had low expectations from the hospital personnel to be responsive to their needs; however, this was not statistically significant.

Table 1. Demographic characteristics of study participants in quality measurement of hospital services study

Variables	*Frequency*	*Percent*
Hospitals		
Vali-Asr	*148*	*38.5*
Amir Kabir	*119*	*30.9*
Amir Almomenin	*118*	*30.6*
Sex		
Male	*209*	*54.3*
Female	*176*	*45.7*
Education		
Illiterate	*42*	*10.9*
Under diploma	*134*	*34.8*
Diploma and associated	*162*	*42.1*
Bachelor's and higher	*47*	*12.2*
Monthly income		
Less than 3 million Rials	*183*	*47.5*
3-5 million Rials	*167*	*43.4*
More than 5 million Rials	*35*	*9.1*

3.1. Lowest mean expectation scores

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3.2. Highest mean expectation scores

In Vali-Asr Hospital survey, the highest expectation score was related to patients wanting the staff to be responsive to all of their concerns. The second highest expectation score was related to the tangibles dimension. Since the appearance of staff or the equipment may have a great impact on patients' assessment of the quality of services, it is necessary for Vali-Asr Hospital to focus on improving tangibles across the hospital. Amir Almomenin Hospital survey revealed that staff's understanding of patients' specific needs was the most expected dimension for patients; otherwise, patients expected to be treated individually as a human being. Amir Kabir Hospital survey demonstrated that the highest expectation score related to patients' needs was feeling safe during treatment with the staff behaving in such a way that instills confidence in them and having the knowledge to answer patients' questions.

3.3. Lowest mean perception scores

Vali-Asr Hospital survey revealed low perceptions related to staff responsiveness to patients' needs. Since patients' highest mean expectation in this hospital was related to the dimension that low perceived responsiveness threatens the hospital's ability to achieve patient satisfaction, the implication for hospital management is that if the hospital desires improvement of hospital services and increase in patient satisfaction, training of staff on patient requirements is of utmost importance. Patients in Amir Almomenin Hospital were unimpressed by the quality of physical facilities and did not regard the wards to be easily accessible. In other words, Amir Almomenin Hospital needs to renovate its physical facilities in order to improve its services quality. Similarly, Amir Kabir Hospital was perceived as in need of upgrading in terms of both physical facilities and staff appearance.

3.4. Highest mean perception scores

The highest perceptions of services for patients in Vali-Asr Hospital were related to staff's behavior in instilling confidence in patients and the physical facilities provided in the hospital. At Amir Almomenin Hospital, the staff were perceived to have patients' best interest in solving patients' problems, should they arise. Amir Kabir Hospital

survey revealed the highest mean perception score for reliability dimension which means the relatively

Table 2. Survey items contributing most to negative gap 5 score (scale -6 to +6)

Item	Gap score	Description
5	-2.13	Hospital environment should be pleasant
7	-2.26	Hospital equipment should be advanced and state-of-the-art
11	-2.11	There should be sufficient parking space for patients' families
13	-1.90	There should be easy access to staff in case of a problem

Note: *p* value for expectation and perception scores more experienced staff of this hospital could do their job properly.

3.5. Average SERVQUAL scores

Overall, the weighted average SERVQUAL gap scores for Vali-Asr Hospital survey were relatively high, particularly in the reliability dimension followed by shortfalls in responsiveness and tangibles, respectively. Gap scores for Amir Almomenin Hospital were greatest of all with higher gap scores recorded in the tangibles and responsiveness dimensions. One can conclude that this can be explained by the fact that this hospital is a busy acute trauma center located in Markazi province. A further fact may be that the hospital is in need of renovation in its physical facilities. Likewise, Amir Kabir Hospital showed the highest gap score in tangibles although this gap was smaller as compared with Amir Almomenin Hospital. The common reason why these two latter hospitals reveal gaps in tangibles may be that they are older facilities and buildings compared to Vali-Asr Hospital which has operated for less than ten years. Table 2 outlines a summary of gap 5 of SERVQUAL scores across the three hospitals. It shows that all five factors of SERVQUAL model are statistically different between exception and perception ($P<0.001$). Analysis of the items which contribute most to these poorer scores indicates that (Table 3) the relatively unpleasant environment of the hospital and the lack of new technologically sophisticated equipment are the biggest sources of patients concern.

Table 3. Summary of patients' gap 5 SERVQUAL scores across three hospitals

Factor	Expectation	Perception	Gap	Weight	Rank	*p* value [a]
Reliability	6.64	4.95	-1.69	17.5	5	<0.05
Tangibles	6.50 5	4.64	-1.86	21.16	2	<0.05
Responsiveness	6.49	4.69	-1.80	21.20	1	<0.05
Assurance	6.42	5.14	-1.28	20.7	4	<0.05
Empathy	6.5	5.14	-1.36	20.7	3	<0.05

4. Discussion

One of the key aims of this study was to investigate the applicability of the SERVQUAL approach to the context of teaching hospitals. There were, however, limitations to this study, e.g. SERVQUAL has been criticized on both theoretical and operational grounds as argued by Asubonteng et al. (1996). Nevertheless, they conclude that "until a better but equally simple model emerges, SERVQUAL will predominate as a service quality measure". Evidence also suggests that while SERVQUAL itself is a useful tool to a service manager. It may not give a complete image of needs, expectations, and perceptions in a service organization context. Several issues have been raised with regard to the use of perception and expectation (P-E) gap scores, i.e. disconfirmation model. Most studies have found a poor fit between service quality as measured through Parasuraman et al. (1988) scale and the overall service quality measured directly through a single-item scale (Babakus and Boller, 1992; Babakus and Mangold, 1992; Carman, 1990; Finn and Lamb, 1991; Spreng and Singh, 1993). Though the use of gap scores is intuitively appealing and conceptually sensible, the ability of these scores to provide additional information beyond that already contained in the perception component of service quality scale is under doubt (Babakus and Boller, 1992; Iacobucci et al., 1994). Studies have also cast doubt on the number and stability of the five SERVQUAL dimensions (Buttle, 1996; Carman, 1990; Babakus and Boller, 1992). Critics of the model question the claim of Parasuraman et al. (1988) that the five SERVQUAL dimensions are universal and generic. Early work (Donnelly and Dalrymple, 1996) led to the suggestion that these criticisms might be justified in the public sector where there are no close commercial sector analogues.

4.1. Expectation scores

Mean expectation scores were high, ranging from 6.42 in assurance dimension to 6.64 (out of the potential maximum 7) in reliability. The reliability to perform the promised services dependably and accurately is most important to patients in their evaluation of service quality. This confirms the findings by Nourihekmat (2006) who also found reliability dimension the most expected one. The

knowledge and courtesy of employees and their ability to convey trust and confidence may be due to the fact that patients take this aspect for granted when they are served by hospitals.

4.2. Perception scores

Mean perception scores ranged from 4.64 in tangibles to 5.14 in assurance and empathy dimensions, which was well perceived by the patients. Generally, the patients felt that the staff had the required knowledge to assist them and were able to convey trust and confidence. They also were of this opinion that the staff paid individual and special attention to each of them and made time to listen to their questions or concerns regarding treatment. However, the appearance of the physical facilities, equipment, personnel and communication materials was a cause of concern. Overall, the largest discrepancy between expectations and perceptions was in the tangibles dimension (Table 2) and this was particularly the case at Amir Almomenin Hospital. Responsiveness was the second most critical dimension followed by reliability, assurance, and finally empathy.

5. Conclusion

The increasing importance of cost control and changing consumer attitudes coupled with severe competition will affect many of the successful hospitals throughout the next decade and they will need to place themselves as "high-quality" health care providers. Even hospitals that do not look for a high quality position will find it necessary to define, screen, and improve the quality of the services they provide. Technical quality alone, however, will not lead to increased revenues and facility utilization; thus, it is necessary to consider functional quality as well. The results of this study demonstrated that SERVQUAL is a useful tool for measuring functional quality from the patient's perspective. The expectation scores in this study were high indicating a potentially difficult problem that needs to be addressed in the healthcare context. Although SERVQUAL gap scores were all negative, it is important not to jump to negative conclusions about the services being provided. In fact, the hospitals performed well in some dimensions of service (reliability and empathy) and received high perception evaluation scores. Unfortunately, these high scores coexisted with higher expectation scores which led to negative gap scores. While there have been a number of problems arising from the application of SERVQUAL in healthcare, this approach has been shown to be appropriate for assessing the quality of services provided by hospitals of Arak University of Medical Sciences. One of SERVQUAL's major contributions to hospitals is its ability to identify symptoms and to provide a starting point for the examination of underlying problems that inhibit the provision of quality services. Administrators should understand the area in which expectations are high, so that the service delivery process can be tailored to meet those expectations. Based on the findings of the present study, the following recommendations are presented to improve the therapeutic service quality and patients' satisfaction. It is not sufficient to pay attention to technical quality alone since patients lack the capacity to assess this type of quality but there is a necessity to focus equally on functional quality which will not increase costs very much, but can bring enormous benefits for the system and make the organization more pleasant for patients. These recommendations include providing better physical facilities; cross training staff on patients' concerns, e.g. their need for better polite behavior, from responsive personnel; providing a trustful atmosphere across the hospital; paying individual attention to each patient; better facilities for visitors.

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Reference

1. Anderson, C.R. and C.P. Zeithaml, 1984. Stage of the product life cycle, business strategy and business performance. Acad. Manage. J., 27: 5 -24.
2. Asubonteng, P., K.J. McCleary and J.E. Swan, 1996. SERVQUAL revisited: A critical review of service quality. J. Services Market., 10: 62 -81. DOI: 10.1108/08876049610148602
3. Babakus, E. and G.W. Boller, 1992. An empirical assessment of the SERVQUAL scale. J. Bus. Res., 24: 253 -268.
4. Babakus, E. and W.G. Mangold, 1992. Adapting the SERVQUAL scale to hospital services: An empirical investigation.Health Serv. Res., 26: 767 -786. PMID: 1737708
5. Bopp, K.D., 1990. How patients evaluate the quality of ambulatory medical encounters: A

marketing perspective. J. Health Care Market., 10: 6 -15. PMID: 10104016
6. Brooks, R.F., I.N. Lings and M.A. Botschen, 1999. Internal marketing and customer driven wavefronts. Ind. J., 19: 49 -67. DOI:10.1080/02642069900000044
7. Buttle, F., 1996. SERVQUAL: Review, critique, research agenda. Eur. J. Market., 30: 8 -32. DOI:10.1108/03090569610105762
8. Carman, J.M., 1990. Consumer perceptions of service quality: An assessment of the SERVQUAL dimension. J. Retail., 66: 33 -55.
9. Carman, J.M., 2000. Patient perceptions of service quality: Combining the dimensions. J. Ser. Market., 14: 337 -352. DOI:10.1108/08876040010334565
10. Carmines, E.G. and R.A. Zeller, 1979. Reliability and Validity Assessment Series: Quantitative Applications in Social Sciences. . Sage University Press, Beverly Hills, CA., Pages: 72.
11. Chaston, I., 1994. Internal customer management and service gaps within the UK manufacturing sector. Int. J. Oper. Prod. Manage., 14: 45 -56. DOI: 10.1108/01443579410066758
12. Donnelly, M. and J.F. Dalrymple, 1996. The portability and validity of the SERVQUAL scale in measuring the quality of local public service provision. Proceedings of the International Conference on Quality, Union of Japanese Scientists and Engineers, October 1996, Yokohama, Japan, pp: 245-249.
13. Edvardsson, B., G. Larsson and S. Setterlind, 1997. Internal service quality and the psychosocial work environment: An empirical analysis of conceptual interrelatedness. Ser. Ind. J., 17: 252 -263. DOI:10.1080/02642069700000014
14. Finn, D.W. and C.W. Lamb, 1991. An Evaluation of the SERVQUAL Scale in a Retailing Setting. In: Advances in Consumer Research, Holman, R. and M.R. Solomon (Eds.). Association for Consumer Research, Provo, UT., pp: 480-493. ISBN: 0915552264
15. Fitzsimons, J. and M.J. Fitzsimons, 2001. Services Management: Operations, Strategy and Information Technology. 3rd Edn., McGraw-Hill, New York, pp: 66-69.
16. Hamidi, Y., 1998. New perspective to health care administration. Iran. J. Tadbir. 83: 46-47.
17. Iacobucci, D., K.A. Grayson and A.L. Ostrom, 1994. The Calculus of Service Quality and Customer Satisfaction: Theoretical and Empirical Differentiation and Integration. In: Advances in Services Marketing and Management: Research and Practice, Swartz, T.A., D.H. Bowen and S.W. Brown (Eds.). JAI Press, Greenwich, CT., pp: 1-67.
18. JCAHO, 1987. Agenda for Change Update. JCAHO, Chicago, pp: 1-4.
19. Lings, I.N. and R.F. Brooks, 1998. Implementing and measuring the effectiveness of internal marketing. J. Market. Manage., 14: 325 -351. DOI:10.1362/026725798784959426
20. Nourihekmat, S., 2006. Applying service quality gap model at HazrateRasool hospital. M.Sc. Thesis, Health Care Administration, Iran University of Medical Sciences, Tehran.
21. Parasuraman, A., V.A. Zeithaml and L.L. Berry, 1988. SERVQUAL: A multiple-item scale for measuring consumer perception. J. Retail., 64:12 -40.
22. Reynoso, J. and B. Moore, 1995. Towards the measurement of internal service quality. Int. J. Ser. Ind. Manage., 6: 64 -83. DOI:10.1108/09564239510091349
23. Sahney, S., D.K. Banwet and S. Karunes, 2004. A SERVQUAL and QFD approach to total quality education: A student perspective. Int. J. Prod. Perform. Manage.,53: 143 -166. DOI:10.1108/17410400410515043
24. Spreng, R.A. and A.K. Singh, 1993. An Empirical Assessment of the SERVQUAL Scale and the Relationship between Service Quality and Satisfaction. In: Enhancing Knowledge Development in Marketing, Cravens, D.W. and P.R. Dickson (Eds.). American Marketing Association, Chicago, IL.,pp: 1-6.
25. Taheri, M., M. Mohammadi, A. Amani, R. Zahiri and A. Mohammadbeigi, 2013. Family physician program in Iran, patients satisfaction in a multicenter study. Pakistan J. Biol. Sci., Vol. 17.
26. Van Iwaarden, J., T. van der Wiele, L. Ball and R. Millen, 2003. Applying SERVQUAL to web sites: An exploratory study. Int. J. Qual. Reliability Manage., 20: 919 -935. DOI: 10.1108/02656710310493634
27. Zeithaml, V.A., 1988. Consumer perceptions of price, quality and value: A Means-end model and synthesis of evidence. J. Market., 52: 2 -22.
28. Zeithaml, V.A., L.L. Berry and A. Parasuraman, 1988. Communication and control processes in the delivery of service quality. J. Market., 52: 35 -48.
29. Zeithaml, V.A., A. Parasuraman and L. Berry, 1990. Delivering Service Quality Balancing Consumer Perceptions and Expectations. The Free Press, New York.

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