



ORIGINAL ARTICLE

Evaluating Service Quality from Patients' Perceptions: Application of Importance–performance Analysis Method

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Received: March 14, 2016
Revised: April 25, 2016
Accepted: May 2, 2016

KEYWORDS:

hospital service quality,
IPA,
patient satisfaction,
SERVQUAL

Abstract

Objectives: Providing high service quality is one of the main functions of health systems. Measuring service quality is the basic prerequisite for improving quality. The aim of this study was to evaluate the quality of service in teaching hospitals using importance–performance analysis matrix.

Methods: A descriptive–analytic study was conducted through a cross-sectional method in six academic hospitals of Qazvin, Iran, in 2012. A total of 360 patients contributed to the study. The sampling technique was stratified random sampling. Required data were collected based on a standard questionnaire (SERVQUAL). Data analysis was done through SPSS version 18 statistical software and importance–performance analysis matrix.

Results: The results showed a significant gap between importance and performance in all five dimensions of service quality ($p < 0.05$). In reviewing the gap, “reliability” (2.36) and “assurance” (2.24) dimensions had the highest quality gap and “responsiveness” had the lowest gap (1.97). Also, according to findings, reliability and assurance were in Quadrant (I), empathy was in Quadrant (II), and tangibles and responsiveness were in Quadrant (IV) of the importance–performance matrix.

Conclusion: The negative gap in all dimensions of quality shows that quality improvement is necessary in all dimensions. Using quality and diagnosis measurement instruments such as importance–performance analysis will help hospital managers with planning of service quality improvement and achieving long-term goals.

1. Introduction

Quality improvement acts as a strategy to attain a competitive advantage in an industry and improve the reputation and profitability of a health organization

during time [1]. All hospitals have found it necessary to measure, monitor, and improve the quality of healthcare services in order to survive and achieve patient satisfaction [2]. Also, the provision of high quality services is crucial to achieve the Millennium Development

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Goals. Healthcare managers need a thorough understanding of the ways to increase the quality of care in practical terms. Under such circumstances, hospital managers put their main emphasis on attracting as many patients as possible and making loyal customers by recognizing their expectations and trying to respond to them in an effective manner [3]. Davis and colleagues [4] confirmed the necessity of measuring healthcare quality in a competitive environment. Service production in the industry is dramatically different from the healthcare services provision in many aspects: e.g., in terms of service quality assessment, one of the most common ways in healthcare is to use the consumers' (patients) perception about the services provided [5].

To evaluate patients' satisfaction and expectations of service quality, the SERVQUAL model was introduced by Parasuraman and Zeithaml [6] in 1985. They concluded that customers assess quality by comparing their expectations with real performance insights. If the customer's performance perceptions exceed their expectations, then the service provider provides quality service. The difference in scores determines the level of service quality.

Many researches have been conducted to assess service quality gap in hospitals and other healthcare organizations worldwide [7–15]. In this study, five dimensions of service quality were measured including tangibility, reliability, responsiveness, assurance, and empathy.

A principle element in quality assurance, evaluating the current level of performance and developing appropriate strategies for improvement is importance–performance analysis (IPA). This technique is based on a four-quadrant matrix which identifies the strengths and weaknesses of the services and determines improvement opportunities to develop strategic planning. IPA has recently been used to assess service quality in healthcare systems [16]. This method is also beneficial for managerial purposes such as allocating insufficient resources to those areas of performance with considerable effect on consumer satisfaction [17].

Quality is a multidimensional concept with patient satisfaction as one of the most important facets which mirrors the quality of services in a hospital setting. Patient satisfaction is defined as patients' opinions of “how well” services meet their needs and expectations, also considered as a valid indicator to measure service quality [18,19]. Since the 1990s, patient satisfaction has been considered as a method to measure care recipients' perceptions about the quality of health services and to analyze their willingness to pay or utilize such services provided in healthcare facilities [20]. However, the IPA model is based on comparing the importance level (expected satisfaction) and performance level (perceived satisfaction) of service quality to extract improvement strategies that will be effective for increasing customer satisfaction [21].

Considering the importance and necessity of evaluating health service quality, particularly those provided in health facilities and hospitals, the current study aimed to evaluate the quality of inpatient services in teaching hospitals affiliated with Qazvin University of Medical Services, Qazvin, Iran using an IPA model.

2. Material and methods

2.1. Study design and research setting

This descriptive–analytic study was carried out through a cross-sectional method in six training hospitals affiliated with Qazvin University of Medical Sciences in 2015. A total of 360 patients from different clinical wards of under-study hospitals contributed to the study (randomly 60 patients from each hospital).

2.2. Sample size

By conducting a literature review, the prevalence of patients' satisfaction was assumed to be 20% with a 95% confidence interval and 5% margin of error. The minimum number of required samples was calculated to be 300 patients. To consider a 20% nonresponse rate, 60 samples were added to this sample size. Therefore, 60 patients were randomly selected from each hospital.

2.3. Inclusion criteria

The inclusion criteria for the study participants were they had to be older than 18 years and had to have been hospitalized for at least 24 hours at the hospital to truly express their attitude toward quality of care. Those inpatients in the intensive care unit, critical care unit, and the emergency ward that had a severe physical condition or mental disorder were extracted from the study.

2.4. Data collection tool

Data collection was conducted using a standard SERVQUAL questionnaire developed by Parasuraman and Zeithaml [6] in 1985. The questionnaire contained an “expectation” section with 22 items and a “perception” section consisting of a set of matching statements. The statements in both expectation and perception sections were categorized into five dimensions of tangibility, reliability, responsiveness, assurance, and empathy. A 5-point Likert scale was used for the scoring system with 1 representing “strongly disagree” and 5 representing “strongly agree.”

Considering the standard questionnaire, the face and content validity of the questionnaire has been confirmed in previous studies. Also, to assure the questionnaire reliability, Ranjbar Ezzatabadi et al [5] in 2012, Tabibi et al [9] in 2012, and Mohammadi and Shoghli [22] in 2009 calculated the Cronbach α upper as 85%.

2.5. Statistical analysis

Statistical analysis was performed using SPSS version 18 (SPSS Inc., Chicago, IL, USA). Descriptive statistics were used to summarize patients and hospitals characteristics. A four-quadrant matrix was plotted on the X–Y coordinate plane based on the combination of two factors including patients' perceptions on the current level of performance and the importance of each eight quality dimensions which helped to classify study parameters and use as a main guide for improvement strategies [23,24]. The meanings of these four quadrants are summarized in Figure 1.

Quadrant I with both a high level of performance and importance represents a priority which needs an immediate action. Quadrant II with high performance but low importance indicates that the organization has over emphasized the related items of this quadrant. Quadrant III with both low performance and importance shows that there is no necessity for improvement, while Quadrant IV requires immediate attention for improvement.

3. Results

The majority of participants (60.5%) belonged to the 18–35-year age group in which 73.8% were women and the rest were men. Furthermore, among the studied patients 98% were hospitalized between 1 day and 5 days (Table 1).

Evaluating the possible relationships between the respondents' characteristics and their perceptions or expectations toward service quality merely confirmed a statistical significant relationship between the patients' length of stay and perception toward service quality, and there was also a significant association between sex and patients' expectation (Table 2).

Table 3 depicts that in Hospitals A, B, and F, the highest and lowest means of negative gaps were related

to reliability (gap score = -3.08 , gap score = -2.54 , and gap score = -2.32 , respectively) and responsiveness (gap score = -2.25 , gap score = -2.06 , and gap score = -2.07 , respectively); in Hospital C the highest and lowest means of negative gaps belonged to assurance (gap score = -1.91) and tangibles (gap score = -1.45); in Hospital D they were related to tangibles (gap score = -2.83) and responsiveness (gap score = -1.57); and, finally, in Hospital E they belonged to empathy (gap score = -2.23) and responsiveness (gap score = -1.79).

Table 4 depicts the means of the patients' perceptions and expectations related to five quality dimensions for each of the six under-study hospitals. Findings confirmed that the greatest total gap between patients' perception and expectation related to Hospital A, while the least gap belonged to Hospital C. Furthermore, among five quality dimensions, the highest gap was related to reliability and the lowest belonged to responsiveness.

IPA matrix analysis showed that tangibles and assurance in Hospital A, assurance in Hospital B, reliability and empathy in Hospital D, and assurance and empathy in Hospital C were placed in Quadrant III. As this area represents the least important aspects from the patients' viewpoints, service providers should therefore transfer resources to other sectors that are faced with serious weaknesses. The "keep up the good" quadrant captured quality dimensions of reliability for Hospitals A and B, assurance and reliability for Hospital C, reliability, responsiveness, and tangibility for Hospital F. Being in this area shows that hospitals have performed well in respect to the mentioned quality dimensions and must try to maintain their current status. As per the data provided in Table 5, patients of all hospitals, except for Hospital F, mentioned responsiveness as an important area which required closer attention for improvement (Table 5).

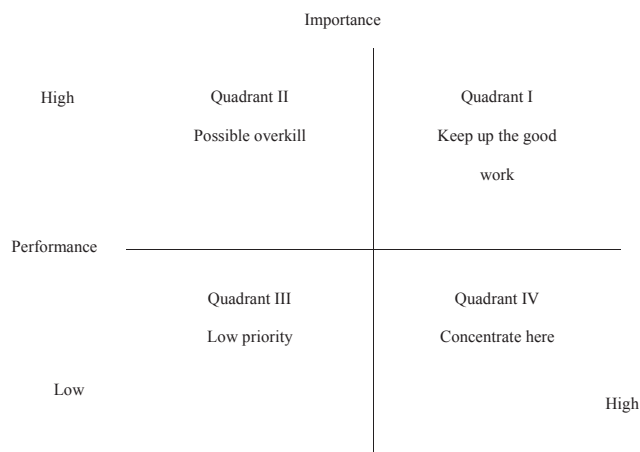


Figure 1. Four quadrants of the importance performance analysis matrix.

Table 1. Descriptive characteristics of respondents.

Variable		<i>N</i>	%
Sex	Women	220	73.8
	Men	78	28.2
Age (y)	18–35	180	60.5
	35–55	94	31
	55–75	18	6.5
	> 75	6	2
Length of hospitalization (d)	1–5	292	98
	5–10	4	1.3
	> 10	2	0.67

Table 2. Association between patients' characteristics and their expectations or perceptions toward service quality.

Variable	Expectation	Perception
	<i>p</i>	<i>p</i>
Age	0.88	0.11
Sex	< 0.05	0.32
Education	0.06	0.34
Length of hospitalization (d)	0.62	0.09

4. Discussion

This study aimed to measure the quality of services provided in under-study hospitals using an IPA model. The study results confirmed a statistically significant difference between the means of patients' expectations and their perceptions in almost all dimensions which were consistent with similar studies [9,25–27]. Karassavidou and Papadopoulos [11], Baldwin and Sohal [28], Luke [14], and Mohammadi and Shoghli [22] also reported a significant difference between patients' perceptions and expectations toward service quality so that patients' expectations surpassed the actual quality provided for service recipients. Similar to our study, some researchers declared a negative gap between patients' perceptions and expectations in all quality dimensions [29].

According to the study results, in all hospitals the minimum gap between patients' perceptions and expectations was observed in the responsiveness dimension, while Karydis et al [30] and Lim and Tang [31] achieved completely different results. In this regard, Hekmatpo et al [32] reported that the lowest gap belonged to assurance.

Through the matrix analysis results showed that in order to maintain a competitive advantage, Hospitals A–D should pay more attention to tangibles, responsiveness, and assurance. Therefore, resources should be allocated to either improve the quality dimensions of the “keep up the good work” quadrant including reliability or resolve the main weaknesses of the “concentrate here” quadrant from patients' points of view. Similar to our findings, Wu et al [33] revealed that reliability and assurance were considered to be in quadrant “keep up

Table 3. Comparison of the quality gap in the five dimensions of quality in hospitals.

Hospital	Tangibles	Reliability	Responsiveness	Assurance	Empathy	Total
A	–2.54	–3.08	–2.25	–2.53	–2.51	–2.59
B	–2.25	–2.54	–2.06	–2.54	–2.35	–2.35
C	–1.45	–1.90	–1.57	–1.91	–1.71	–1.71
D	–2.83	–2.77	–2.34	–2.47	–2.51	–2.59
E	–1.80	–2.02	–1.79	–2.04	–2.23	–1.97
F	–2.26	–2.32	–2.07	–2.20	–2.12	–2.19

Table 4. Comparison of the performance–importance gap between hospitals.

D	Tangibles				Reliability				Responsiveness				Assurance				Empathy				T.G
	P	SD	I	SD	P	SD	I	SD	P	SD	I	SD	P	SD	I	SD	P	SD	I	SD	
A	3.14	0.66	4.68	0.26	1.83	0.75	4.91	0.17	2.28	1.10	4.54	0.23	2.18	1.04	4.72	0.25	2.46	1.22	4.98	0.06	−3.59
B	2.40	0.66	4.65	0.28	2.31	0.73	4.86	0.24	2.52	0.64	4.59	0.28	2.10	0.46	4.65	0.24	2.54	0.67	4.89	0.16	−2.35
C	2.02	0.76	3.47	0.81	1.82	1.05	3.72	0.99	2.03	0.89	3.61	0.91	1.90	0.85	3.82	0.73	1.86	1.06	3.58	1.15	−1.71
D	1.47	0.38	4.30	0.56	1.24	0.38	4.01	0.62	1.65	0.57	3.99	0.54	1.48	0.45	3.95	0.53	1.30	0.57	3.84	0.81	−2.59
E	2.66	0.84	4.46	0.75	2.60	0.96	4.61	0.88	2.58	0.69	4.38	0.75	2.41	0.95	4.45	0.91	2.50	0.94	4.73	0.76	−1.79
F	2.51	0.53	4.77	0.21	2.45	0.85	4.77	0.24	2.45	0.61	4.53	0.31	2.59	0.66	4.80	0.23	2.68	0.76	4.80	0.32	−2.19
T	2.21	0.77	4.34	0.73	2.07	0.95	4.43	0.80	2.25	0.81	4.23	0.70	2.11	0.86	4.36	0.70	2.21	1.00	4.41	0.90	
T.G	2.13				2.36				1.98				2.25				2.20				T

D = dimension; H = hospital; I = importance; P = performance; SD = standard deviation; T = total; TG = total gap (TG).

Table 5. Comparison of the hospitals' situations in the importance performance analysis matrix.

5 dimensions of quality					
Hospital	Tangibles	Reliability	Responsiveness	Assurance	Empathy
A	Q (III)	Q (I)	Q (IV)	Q (III)	Q (II)
B	Q (IV)	Q (I)	Q (IV)	Q (III)	Q (II)
C	Q (IV)	Q (I)	Q (IV)	Q (I)	Q (II)
D	Q (II)	Q (III)	Q (IV)	Q (IV)	Q (III)
E	Q (IV)	Q (II)	Q (IV)	Q (III)	Q (III)
F	Q (I)	Q (I)	Q (I)	Q (II)	Q (II)

Q = quadrant.

the work" which reflects the importance and at the same time acceptable performance of these dimensions. Findings also declared that perceived quality of services was mainly dependant on the tangibility dimension confirming that the highest mean of patients' expectations was related to physical environment, equipment, payment process, and cleanliness. Results reported by Parasuraman and Zeithaml [6] and Boshoff and Gray [34] approved the results and stated that patients' perceptions of quality were mainly affected by environment and physical evidence than the core services. Sohail [10] also emphasized the importance of modern equipment, cleanliness, and visual conditions of facilities in his study.

To achieve the highest level of quality in hospital services and to determine current gaps, there is a need to evaluate and analyze patients' perceptions toward different quality dimensions and compare it with their expectations of service quality. This study emphasized the IPA model as an applicable tool using an X–Y coordinate plane with a four quadrant matrix, which interprets the current situation of each healthcare provider from the perspective of different quality dimensions. Applying this tool can also help managers improve service quality and patients' satisfaction through emphasizing service recipients' perceptions of importance and performance revealed in each quadrant. Furthermore, decision makers can use the matrix

analysis results to allocate scarce resources efficiently by putting more emphasis on areas which need special attention. Such an assessment is essential to reduce costs in today's competitive health market.

Conflicts of interest

The authors have no conflict of interest to declare.

Acknowledgments

The authors appreciate Qazvin University of Medical Sciences and affiliated hospitals which facilitated the gathering data process.

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