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Assessment of Healthcare Service Quality and Patient Satisfaction Using the SERVQUAL Questionnaire in Khuzestan Province During 2022 - 2023

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Abstract

Background: Hospital service quality is the primary predictor of a hospital's success, and any decrease in patient satisfaction is a cause for concern for the organization.

Objectives: This study aimed to evaluate the service quality of Golestan Hospital in Ahvaz, Iran, based on patient satisfaction measured using the SERVQUAL questionnaire.

Methods: This cross-sectional study was conducted in 2022 - 2023. Patients over 18 years old who visited the emergency department at Golestan Hospital were evaluated, with the exception of those with mental or multiple chronic disorders. Data collection tools included demographic and SERVQUAL Questionnaires. The data were analyzed using SPSS software, with a significance level set at less than 0.05.

Results: A total of 200 subjects participated in the study, comprising 124 females (62%) and 76 males (38%). The results of the SERVQUAL Questionnaire indicated that the highest score was in the tangibility dimension (4.35), while the lowest score was in the assurance dimension (1.38). Negative gaps between perception and expectation were observed in the responsiveness (-0.99) and empathy (-1.22) dimensions. The mean total scores for expectation and perception were 99.55 ± 5.06 and 92.85 ± 5.5, respectively, with the highest scores observed for reliability. No significant association was found between expectation and perception (P-value > 0.05). However, the reliability of the gap and expectation in males was significantly higher (P-value < 0.05). A direct correlation was found between age and tangibility, Assurance, and total score of gaps (P-value < 0.05). Conversely, a reverse correlation was observed between age and tangibility and the total score in perception (P-value < 0.05). Post-hoc analysis revealed that the Assurance and total score of gaps and expectations were significantly higher in married patients compared to single patients (P-value < 0.05).

Conclusions: This study revealed a negative gap between patients' expectations and perceptions, highlighting the need for adjustments and improvements in hospital service quality by addressing all five dimensions of service quality.

Keywords: Health Services Research, Services Quality, Patient Satisfaction, Health Care Evaluation, Health-Care Providers

1. Background

Hospital service quality is recognized as the primary predictor of a hospital's success, and any decline in client or patient satisfaction due to subpar service quality raises concerns for the organization (1). It is well-known that poor healthcare service can significantly impact clinical outcomes, lead to patient dissatisfaction, pose life-threatening risks, and reduce the quality of life for both patients and their families. A study conducted in China demonstrated that, despite considerable advancements in the primary healthcare system, there remain significant gaps in the quality of healthcare services, particularly for chronic diseases (2). In line with this, it was observed that patients with chronic conditions received less healthcare during the COVID-19 pandemic and consequently experienced a lower quality of life (3). Chronic diseases such as heart disease,

cancer, and diabetes require long-term medical services, making the identification and implementation of success factors for health promotion crucial for healthcare centers. Furthermore, the rising prevalence of chronic disorders underscores the need to enhance the service quality provided by healthcare professionals. The number of chronic diseases is considered a non-modifiable factor in perceived service quality (4).

The increasing demand for healthcare, especially following the COVID-19 pandemic, coupled with limited resources, rising costs, and a diverse range of clinical interventions, has motivated many healthcare systems to focus on monitoring and improving service quality (5). Traditionally, service quality measurement was primarily based on the healthcare service quality index. However, newer approaches define quality based on patients' overall attitudes or judgments towards the services they receive (6). Delivering high-quality services can enhance the success of healthcare organizations by positively influencing patient satisfaction, loyalty, and perceived value (7). Hospital service quality encompasses both clinical and non-clinical aspects. Clinical quality pertains to medical diagnosis and the accuracy of clinical skills and procedures, while non-clinical quality relates to the manner in which healthcare services are provided to patients (8). In recent years, the measurement of patients' perceived value of healthcare services has become a key approach for assessing quality. Although healthcare provision relies on the coordination between groups of nurses, doctors, and specialists, patient satisfaction with the quality of hospital services ultimately determines their loyalty and willingness to recommend the hospital. In fact, patient feedback offers valuable insights into issues that may have previously gone unnoticed, making it a useful tool for organizational learning and improvement (9).

Patients' opinions or judgments on healthcare quality are crucial because the delivery of high-quality healthcare services is closely linked to patient compliance with doctors' orders, their willingness to reuse services in the future, and more. Moreover, patient feedback is an important prerequisite for hospital accreditation programs, and high patient satisfaction is positively associated with the financial performance and profitability of healthcare organizations (10, 11).

The SERVQUAL Questionnaire was first introduced by Parasuraman et al. to measure customer satisfaction with the quality of services. In this questionnaire, the Customer Satisfaction Index (CSI) is defined at various national and international levels, allowing organizations to evaluate themselves based on these benchmarks (12). In a study conducted by Akbar et al. in Indonesia, the results of the SERVQUAL Questionnaire revealed that the satisfaction level with elderly health services provided by the chronic disease management program was high across all dimensions of SERVQUAL (13).

In Iran, most studies have reported a negative gap between the quality of hospital services and patient or client satisfaction based on the SERVQUAL Questionnaire. Khaki et al. noted that this negative gap is due to patients' expectations being higher than their perceptions of the existing situation and facilities, indicating that there is still a long way to go to achieve complete satisfaction (14). Additionally, a systematic review and meta-analysis highlighted that the quality of health services in Iran is not satisfactory for patients and requires improvement (15). Similarly, studies using the SERVQUAL Questionnaire in Asian countries have shown that patients had significantly higher expectations of medical services across the five dimensions studied (16).

2. Objectives

Given the importance of purposefully identifying the strengths and weaknesses of service quality to achieve patient satisfaction, and considering the limited number of scientific studies on this subject in Iran, this study was designed to evaluate the quality of services at Golestan Hospital in Ahvaz, Iran, based on patient satisfaction as measured by the SERVQUAL standard questionnaire. Golestan Hospital is a major healthcare center in Khuzestan province, attracting many patients from nearby cities.

3. Material

3.1. Study Population

In this analytical cross-sectional study, patients referred to the emergency department of Golestan Hospital were included. The inclusion criteria were as follows: Patients aged over 18 years, with no history of

mental disorders, and possessing acceptable communication skills. Exclusion criteria included patients with disabilities, multiple chronic disorders, acute trauma, or incomplete documentation. The subjects were selected using a convenience non-probability sampling method. The sample size was calculated based on Omidi et al.'s (17) study, using the empathy correlation coefficient, with $\alpha = 0.05$, $\beta = 0.05$. According to the formula $N = [(Z\alpha + Z\beta)/C]^2 + 3$, the minimum required sample size was determined to be 100.

After selecting the participants, the questionnaires were completed by the chosen subjects in the emergency clinic in a calm and stress-free environment. A medical student researcher was present to answer any questions from the participants. All participants signed informed consent prior to the study. The study was approved by the Ethical Committee of Ahvaz Jundishapur University of Medical Sciences (IR.AJUMS.HGOLESTAN.REC.1400.065).

3.2. SERVQUAL Questionnaire

The SERVQUAL Questionnaire utilizes a seven-point Likert Scale to assess the gap between customer expectations and perceptions of service quality. This model comprises 22 items, divided into two areas: Expectations and perceptions, which evaluate the service quality of an organization across five different dimensions. These dimensions are: (1) tangibility (questions 1 - 4), refers to the visible and physical aspects of a service that customers can observe and feel; (2) reliability (questions 5 - 9), measures the ability to deliver the service as expected by the customer and at the expected time; (3) responsiveness (questions 10 - 13), assesses the ability of a service provider to promptly and effectively respond to customer needs and requests; (4) assurance (questions 14 - 17), evaluates the ability of service providers to convey trust and confidence to customers; (5) empathy (questions 18 - 22), reflects the service provider's capacity to understand and acknowledge a customer's feelings, indicating an understanding of their frustration or pain. For each dimension, scores are calculated separately for both the expectation (E) and perception (P) domains. The gap between these scores (E-P) indicates the service quality of an organization. If expectations exceed perceptions, the gap is negative, suggesting that the service quality, from the customer's perspective, is lacking, leading to dissatisfaction.

The SERVQUAL Questionnaire yields a total score ranging from 22 to 154. Scores between 22 and 66 indicate unsatisfactory service quality, scores between 66 and 88 suggest average service quality, and scores above 88 represent good service quality.

3.3. Reliability and Validity of SERVQUAL Questionnaire

According to Omidi et al.'s (17) research, the overall Cronbach's alpha coefficient was 79%, indicating a good level of internal consistency for the SERVQUAL Questionnaire. The reliability for the two sections—expectations and perceptions—was assessed as follows: Expectations, tangibility: 85%; reliability: 79%; responsiveness: 85%; assurance: 81%; empathy: 80%. Perceptions, tangibility: 78%; reliability: 73%; responsiveness: 76%; assurance: 79%; empathy: 74%. These coefficients demonstrate that the SERVQUAL Questionnaire is a reliable tool for assessing service quality in healthcare settings.

3.4. Statistical Analysis

The normality of the data was evaluated using the Kolmogorov-Smirnov test. For parametric analysis, the *t*-test was used, while the Mann-Whitney test was applied for non-parametric analysis. Univariate analysis was conducted using ANOVA, Kruskal-Wallis, and independent *t*-tests. Multivariate analysis was performed using logistic regression. A P-value of less than 0.05 was considered statistically significant. Data analysis was carried out using SPSS software (version 26).

4. Results

4.1. Study Population Characteristics

A total of 200 subjects participated in the current investigation, including 124 females (62%) and 76 males (38%). The mean age of the participants was 41.45 ± 18.7 years. Among the subjects, 58% had a university education (Table 1). Regarding occupation, 24.5% were housekeepers, followed by employees (18.5%), self-employed individuals (8.5%), and retirees (7.5%). Additionally, 60.5% of the participants were married,

Table 1. Demographics Information of Participants

Variables	Frequency (%)
Gender	
Female	124 (62)
Male	76 (38)
Education	
Illiterate	44 (22)
High school	15 (7.5)
Diploma	25 (12.5)
University	116 (58)
Occupation	
Self-employment	17 (8.5)
Retired	15 (7.5)
Housewife	49 (24.5)
Employee	37 (18.5)
Other	82 (41)
Marital status	
Single	72 (36)
Married	121 (60.5)
Divorced	7 (3.5)
Economic condition	
Weak	69 (34.5)
Average	107 (53.5)
Good	24 (12)
Place of residence	
Town	138 (69)
Village	62 (31)
Types of insurance	
Health insurance	115 (57.5)
Medical service insurance	64 (32)
Social security insurance	8 (4)
Armed forces insurance	13 (6.5)

and 53.5% reported having a medium economic status (Table 1). All participants had health insurance.

4.2. SERVQUAL Questionnaire Results

The results of the SERVQUAL questionnaire indicated that the highest scores were in the tangibility (4.35), reliability (3.18), and assurance (1.38) dimensions, respectively (Table 2). Additionally, negative gaps between patients' perceptions and expectations were observed in the responsiveness (-0.99) and empathy (-1.22) dimensions (Table 2).

The means of expectation and perception were calculated separately. The total mean score for expectation was 99.55 ± 5.06, while the total mean score for perception was 92.85 ± 5.5 (Table 3). In both the expectation and perception dimensions, the highest scores were observed for Reliability, with mean scores of 26.16 ± 2.54 and 22.98 ± 2.08, respectively (Table 3).

The results of the Pearson correlation test did not reveal any significant associations between the dimensions of expectation and perception, including tangibility (r = -0.115, P-value = 0.09), reliability (r = 0.06, P-value = 0.39), responsiveness (r = 0.016, P-value = 0.82), assurance (r = 0.26, P-value = 0.96), and empathy (r = -0.058, P-value = 0.28) (Table 3).

Further analysis indicated that the gap in Reliability was significantly higher in males compared to females (3.78 vs. 2.81, P-value = 0.047). In contrast, no significant differences were found between genders in the remaining dimensions (P-value > 0.05) (Table 4). A significant difference between males and females was also observed in the Reliability dimension of

Table 2. The Gap Result of SERVQUAL Questionnaire

SERVQUAL Questionnaire Domains	Minimum	Maximum	Mean ± SD
Tangibility	-7	13	4.35 ± 3.65
Reliability	-5	11	3.18 ± 3.19
Responsiveness	-10	8	-0.99 ± 3.40
Assurance	-9	10	1.38 ± 3.67
Empathy	-11	13	-1.22 ± 3.87
Total	-12	26	6.69 ± 7.58

Table 3. The Item Means of Expectation and Perception of SERVQUAL Questionnaire and Theirs Correlation Between the Patients

Dimensions	Expectation (Mean ± SD)	Perception (Mean ± SD)	Correlation	P-Value
Tangibility	20.50 ± 2.29	16.14 ± 2.34	-0.115	0.09
Reliability	26.16 ± 2.54	22.98 ± 2.08	0.060	0.39
Responsiveness	11.59 ± 2.57	12.59 ± 2.27	0.016	0.82
Assurance	22.71 ± 2.61	21.33 ± 2.59	0.003	0.96
Empathy	18.58 ± 3.067	19.81 ± 2.86	-0.058	0.28
Total	99.55 ± 5.06	92.85 ± 5.52	-0.026	0.71

expectations (26.71 vs. 25.82, P-value = 0.027) (Table 4). However, the perception dimensions did not significantly differ between the two genders (P-value > 0.05) (Table 4).

Further analyses demonstrated a direct correlation between age and tangibility (r = 0.167, P-value = 0.018), Assurance (r = 0.143, P-value = 0.044), and the total score of gaps in the SERVQUAL questionnaire (r = 0.2, P-value = 0.005) (Table 5). Additionally, it was found that there is a reverse correlation between age and tangibility (r = -0.186, P-value = 0.008) as well as the total score of perception (r = -0.164, P-value = 0.02). However, no significant correlations were found between age and expectation (P-value > 0.05) (Table 5).

Our analysis indicated that the level of education had no significant influence on the gap dimensions of the SERVQUAL questionnaire (P-value > 0.05) (Table 6). Similarly, the place of residence of patients did not significantly affect the gap dimensions of SERVQUAL Questionnaire scores (P-value > 0.05) (Table 6). In contrast, significant differences were observed between marital status and both the Assurance dimension (P-value = 0.009) and the total score (P-value = 0.045) among the gap dimensions (Table 6).

Post Hoc analysis revealed that Assurance was significantly higher in married patients compared to single patients (1.94 vs. 0.31, P-value = 0.003), and the total score was also higher in married patients than in single subjects (7.44 vs. 5.18, P-value = 0.038) (Appendix 1).

Additionally, no significant differences were found between education level and both expectation and perception (P-value > 0.05) (Table 6). The perception dimensions were also not significantly influenced by marital status (P-value > 0.05) (Table 6). Moreover, there was no significant association between place of residence or economic status with expectation and perception (P-value > 0.05) (Table 6). However, significant differences were found in the Assurance dimension (P-value = 0.014) and the total score (P-value = 0.029) of expectations when adjusted for marital status (Table 6).

The Post Hoc analysis demonstrated that single patients had significantly lower assurance scores compared to divorced (P-value = 0.028) and married patients (P-value = 0.009) (Appendix 2). Additionally, the total score of expectations in married patients was significantly higher than in single patients (P-value = 0.017) (Appendix 2).

5. Discussion

Our data indicated a negative gap between the expectations and perceptions of patients, which is representative of unfavorable services. Our analysis

Table 4. Comparing Two Genders for Gap, Expectation, and Perception Dimensions of SERVQUAL Questionnaire [a]

Dimensions	Gap		P-Value	Expectation		P-Value	Perception		P-Value
	Male	Female		Male	Female		Male	Female	
Tangibility	4.37 ± 4.134	4.34 ± 3.347	0.76	20.49 ± 2.66	20.50 ± 2.491	0.72	16.12 ± 2.5	16.16 ± 2.25	0.91
Reliability	3.78 ± 3.428	2.81 ± 2.991	0.047	26.71 ± 2.35	25.82 ± 2.601	0.27	22.93 ± 2.39	23.01 ± 1.88	0.92
Responsiveness	-1.00 ± 3.323	-0.99 ± 3.470	0.95	11.62 ± 2.48	11.58 ± 2.632	0.81	12.62 ± 2.12	12.57 ± 2.36	0.69
Assurance	1.36 ± 3.573	1.40 ± 3.754	0.77	22.71 ± 2.63	22.72 ± 2.615	0.93	21.36 ± 2.69	21.32 ± 2.53	0.71
Empathy	-1.17 ± 3.328	-1.26 ± 4.188	0.79	18.37 ± 2.82	18.71 ± 2.816	0.21	19.54 ± 2.07	19.97 ± 2.72	0.16
Total	7.33 ± 8.205	6.30 ± 7.192	0.6	99.89 ± 5.19	99.33 ± 4.994	0.65	92.57 ± 5.46	93.03 ± 5.56	0.84

[a] Values are expressed as mean ± SD unless otherwise indicated.

Table 5. Evaluating the Correlation Between Age with Gap, Perception, and Expectation Dimensions of SERVQUAL Questionnaire

Age Correlation with Perception and Expectation Dimensions of SERVQUAL Questionnaire	Gap		Perception		Expectation	
	Correlation	P-Value	Correlation	P-Value	Correlation	P-Value
Tangibility	0.167	0.018	-0.186	0.008	0.068	0.34
Reliability	-0.032	0.651	0.109	0.124	0.049	0.48
Responsiveness	0.072	0.312	-0.108	0.127	-0.001	0.99
Assurance	0.143	0.044	-0.114	0.108	0.087	0.21
Empathy	0.062	0.381	-0.062	0.38	0.030	0.67
Total	0.200	0.005	-0.164	0.02	0.121	0.08

revealed a direct correlation between age and the dimensions of "tangibility," "Assurance," and the total score of the gap. Additionally, the gap was higher in married subjects than in single patients in the Assurance and total score dimensions. We also found that the "Assurance" and total score of expectations were significantly higher in married and divorced patients compared to single patients.

In contrast, Omidi et al.'s study demonstrated a significant positive correlation between perceived services and patient satisfaction. They found that factors such as the tranquility of the environment, suitable waiting spaces, providing accurate information to patients, and the punctuality of personnel had the greatest impact on patient satisfaction (17). The SERVQUAL method is a valuable tool for understanding patient expectations, identifying irregularities, and implementing corrective measures (18). Based on our findings, we observed that our patients had high expectations in the "responsiveness" and "empathy" dimensions, with the highest gap score observed in the "tangibility" dimension. This is consistent with the findings of Ozretic Dosen et al. from Croatia, who indicated that the management of university hospitals should pay more attention to the "responsiveness" and "tangibility" dimensions (19).

Sharifi et al. also reported a negative gap between service users' expectations and perceptions using both the SERVQUAL and HEALTHQUAL models. Their findings based on the SERVQUAL model showed that "empathy" had the highest quality dimension (20). It has been demonstrated that healthcare professionals with high empathy are more effective in providing therapeutic changes. However, factors such as high patient load, lack of adequate time, and limited medical personnel negatively impact the development of empathy (21). In response, the literature has increasingly focused on interventions to enhance the empathy dimension among healthcare professionals (22, 23).

Our study demonstrated a negative gap in the "responsiveness" dimension. However, we did not find significant associations between the "responsiveness" gap and variables such as age, marital status, place of residence, education level, and economic status. In contrast, Amporfro et al.'s results showed that education and religion are significantly associated with service reliability, overall satisfaction, and responsiveness. They also found that the payment option is associated with

Table 6. Evaluating the Influence of Demographic Factors on Gap, Expectation, and Perception Dimensions of SERVQUAL Questionnaire

Variables (Dimensions)	Education					P-Value	Marital Status			P-Value	Place of Residence		P-Value	Economic Situation			P-Value
	University Education	Under Diploma	Diploma	Literacy	Total		Divorced	Single	Married		City	Village		Poor	Medium	Good	
Gap																	
Tangibility	4.1 ± 3.5	3 ± 4.2	4.6 ± 3.7	5.2 ± 3.4	4.3 ± 3.6	0.19	5.5 ± 3.9	3.8 ± 3.7	4.5 ± 3.5	0.32	4.2 ± 3.7	4.6 ± 3.4	0.53	4.3 ± 3.5	4.4 ± 3.6	3.7 ± 4.2	0.62
Reliability	3.5 ± 3.4	2.6 ± 2.8	2.1 ± 2.6	2.9 ± 2.5	3.1 ± 3.1	0.13	1.7 ± 2.2	3.5 ± 3.2	3.03 ± 3.2	0.19	3.2 ± 3.2	2.9 ± 3.0	0.60	3.07 ± 3	3.4 ± 3.1	2.2 ± 3.5	0.22
Responsiveness	-1.2 ± 3	0.3 ± 3.4	-1.2 ± 4.1	-0.7 ± 3.5	-0.9 ± 3.4	0.26	1 ± 3.1	-1.5 ± 3.2	-1.2 ± 3.4	0.28	-0.9 ± 3.3	-1 ± 3.5	0.86	-0.7 ± 3.2	-1.1 ± 3.5	-0.9 ± 3.3	0.63
Assurance	0.8 ± 3.9	1.4 ± 2.8	2. ± 2.9	2.4 ± 3.2	1.3 ± 3.6	0.05	2.7 ± 2.5	0.3 ± 3.9	1.9 ± 3.4	0.009	1.5 ± 3.7	1 ± 3.5	0.17	1.3 ± 3.6	1.4 ± 3.7	1.3 ± 3.6	1
Empathy	-1.2 ± 3.9	-1.4 ± 3.1	-1.5 ± 3.5	-0.8 ± 4.1	-1.2 ± 3.8	0.99	-1.7 ± 2.6	-1.3 ± 4.1	-1.1 ± 3.7	0.078	-1.1 ± 3.9	-1.4 ± 3.6	0.76	-0.9 ± 4.4	-1.4 ± 3.6	-1. ± 3.09	0.44
Total	6.3 ± 7.06	5.9 ± 7.9	6.1 ± 7.9	9. ± 8.3	6.6 ± 7.5	0.21	9.2 ± 3.9	5.1 ± 6.8	7.4 ± 8.04	0.045	6.9 ± 7.5	6.2 ± 7.7	0.73	7.1 ± 7.4	6.7 ± 7.5	5.2 ± 8.2	0.49
Expectation																	
Tangibility	20.3 ± 2.5	20.3 ± 2.4	20.7 ± 2.6	20.7 ± 2.5	20.5 ± 2.5	0.70	20.8 ± 1.8	20.2 ± 20.6	20.6 ± 20.5	0.66	20.3 ± 2.5	20.7 ± 2.4	0.30	20.4 ± 2.5	20.5 ± 2.5	20.4 ± 2.7	0.99
Reliability	26.2 ± 2.6	26.4 ± 2.2	25.3 ± 2.7	26.2 ± 2.2	26.1 ± 2.5	0.35	25.1 ± 2.5	26.1 ± 26.2	26.2 ± 26.1	0.52	26.1 ± 2.5	26.1 ± 2.5	0.90	26.1 ± 2.4	26.4 ± 2.4	25.1 ± 3.1	0.15
Responsiveness	11.4 ± 2.5	13.0 ± 2.3	11.2 ± 2.7	11.7 ± 2.6	11.5 ± 2.5	0.15	12.7 ± 2.6	11.4 ± 11.6	11.6 ± 11.5	0.41	11.7 ± 2.5	11.2 ± 2.6	0.21	11.5 ± 2.7	11.5 ± 2.4	12.0 ± 2.5	0.55
Assurance	22.2 ± 2.7	23.4 ± 2.5	23.8 ± 2.3	23.0 ± 2.1	22.7 ± 2.6	0.06	24.2 ± 1.7	22.0 ± 23.0	23.0 ± 22.7	0.014	22.8 ± 2.6	22.5 ± 2.4	0.50	2.8 ± 2.6	22.6 ± 2.6	22.5 ± 2.5	0.70
Empathy	18.6 ± 2.8	18.1 ± 2.8	18.3 ± 2.7	18.7 ± 2.9	18.5 ± 2.8	0.99	18.5 ± 1.7	18.4 ± 18.6	18.6 ± 18.5	0.99	18.6 ± 2.8	18.5 ± 2.7	0.96	18.9 ± 3.0	18.3 ± 2.5	18.5 ± 3.2	0.37
Total	98.9 ± 5.03	101.3 ± 4.5	99.5 ± 5.6	100.4 ± 4.8	99.5 ± 5.0	0.20	101.5 ± 3.8	98.35 ± 5.2	100.1 ± 4.9	0.029	99.7 ± 5.0	99.1 ± 5.1	0.51	99.8 ± 5.0	99.5 ± 4.9	98.7 ± 5.6	0.66
Perception																	
Tangibility	16.2 ± 2.4	17.3 ± 2.7	16.0 ± 1.8	15.4 ± 1.9	16.1 ± 2.3	0.11	15.2 ± 2.2	16.4 ± 2.3	16.0 ± 2.3	0.32	16.1 ± 2.4	16.1 ± 2.2	0.84	16.0 ± 2.2	16.0 ± 2.3	16.7 ± 2.4	0.31
Reliability	22.7 ± 2.2	23.8 ± 1.4	23.2 ± 1.7	23.3 ± 1.9	22.9 ± 2.1	0.17	23.4 ± 1.7	22.5 ± 2.0	23.1 ± 2.1	0.16	22.9 ± 2.1	23.1 ± 2.1	0.31	23.0 ± 2.1	22.9 ± 2.1	22.9 ± 1.8	0.93
Responsiveness	12.6 ± 2.1	12.6 ± 2.4	12.4 ± 2.5	12.4 ± 2.5	12.5 ± 2.2	0.81	11.7 ± 2.2	12.5 ± 2.1	12.6 ± 2.3	0.55	12.7 ± 2.8	12.3 ± 2.4	0.41	12.2 ± 1.9	12.7 ± 2.4	12.9 ± 2.2	0.26
Assurance	21.4 ± 2.5	22.0 ± 2.2	21.8 ± 2.0	20.5 ± 2.9	21.3 ± 2.5	0.20	21.5 ± 2.2	21.7 ± 2.6	21.0 ± 2.5	0.19	21.2 ± 2.6	21.4 ± 2.4	0.66	21.4 ± 2.5	21.2 ± 2.6	21.2 ± 2.6	0.83
Empathy	19.8 ± 2.6	19.6 ± 1.8	19.8 ± 2.1	19.6 ± 2.4	19.8 ± 2.5	0.82	20.2 ± 2.4	19.8 ± 2.9	19.7 ± 2.2	0.72	19.7 ± 2.5	19.9 ± 2.3	0.79	19.8 ± 2.8	19.8 ± 2.3	19.6 ± 1.7	0.81
Total	92.9 ± 5.3	95.4 ± 5.8	93.4 ± 5.0	91.4 ± 5.9	92.8 ± 5.5	0.07	92.2 ± 2.3	93.1 ± 5.4	92.7 ± 5.7	0.82	92.8 ± 5.6	92.9 ± 5.3	0.76	92.6 ± 5.5	92.8 ± 5.5	93.5 ± 5.4	0.91

the "responsiveness" and "tangibility" dimensions (24). Similarly, Mrabet et al. revealed that reliability, tangibility, assurance, and responsibility significantly contribute to patient satisfaction. They noted that if patients perceive health services as credible, reliable, tangible, and responsive, they tend to have a positive perception even in the absence of empathy (25).

Our study did not find any significant associations between education level or income and satisfaction with service quality. In other regions, education and economic status are directly linked to satisfaction with healthcare services, highlighting the complexity of this issue (26). Differences in patient types, cultures, study locations, and types of medical centers (government vs. private) may explain the discrepancies between findings. Manzoor et al. demonstrated that, in addition to the availability of healthcare services, the physician's behavior significantly improves patient satisfaction (11).

Our data showed that the total score, "Assurance," and "tangibility" dimensions of the gap are directly associated with age. Contrary to our findings, Aljarallah et al. showed that total satisfaction is higher in younger patients (27). Additionally, we observed that the "Assurance" and total score of expectations in married and divorced patients are significantly higher, leading to an increased gap. This contrasts with Pekkaya et al.'s findings, which indicated that age, income, and service type influence satisfaction with service quality, but not marital status (28). Interestingly, the marital status of medical staff has been directly associated with job performance (29).

Our findings showed that the highest scores for perceptions and expectations were associated with the "Reliability" dimension. This aligns with the findings of Kashf et al. from Ahvaz, although their results demonstrated a negative difference in all five dimensions (30). In 2017, Fan et al. assessed patients' perceptions of service quality based on SERVQUAL in China. Contrary to our findings, they found a statistically significant difference between patients' expectations and perceptions of service quality before and after receiving medical services. The negative quality gap in responsiveness and assurance services among male patients in Fan et al.'s study was 0.69 and 0.76 times higher, respectively, than among female participants. Patients' perceptions of healthcare service quality were reported to be lower than their expectations, resulting in unfavorable satisfaction levels (31). Although the level of satisfaction in our study population was low, similar to other studies, we did not find a significant difference between patients' expectations and perceptions of healthcare services, as both were at low and unfavorable levels.

5.1. Limitations

One of the limitations of our study was its single-centered nature, which restricts the generalizability of the findings. Additionally, comparing different methods in Iran was challenging because few studies have utilized other tools and models to measure the quality of hospital services in the country. Another limitation was the lack of distinction between chronic and trauma patients, which we strongly recommend addressing in future studies.

5.2. Conclusions

The present findings indicated that patients' expectations across all five dimensions of service quality were not optimally met, resulting in lower satisfaction. However, no significant difference or gap was observed between the patients' expectations and perceptions of healthcare services. Understanding the underlying reasons for this lack of a significant gap requires more comprehensive and psychological multi-center investigations, comparing the studied community with people from other cities. Overall, our findings highlight the importance of making adjustments and improvements in hospital service quality by addressing all five dimensions of service quality: Tangibility, reliability, responsiveness, assurance, and empathy.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

Footnotes

Authors' Contribution: M. H.: Conceptualization, methodology, project administration, funding acquisition, supervision; M. P.: Investigation, funding acquisition, writing; A. E.: Assistance in investigation, data curation. All the authors critically reviewed and revised the manuscript. All the authors read and approved the final manuscript.

Conflict of Interests Statement: The authors declare no conflicts of interest.

Data Availability: The dataset presented in the study is available upon request from the corresponding author during submission or after publication. The data are not publicly available due to confidentiality issues.

Ethical Approval: The current study was performed based on Helsinki declarations and was approved by the Ethics Committee of Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran with ethical code: IR.AJUMS.HGOLESTAN.REC.1400.065 . The local institutional ethics committee of study center oversaw the proceedings and documentation.

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