Original Article

Application of the SERVQUAL model to assess patients' experience with outpatient services in Northern Iran's electronic referral hospitals

Mohammad Javad Kabir [1], Alireza Heidari [1*], Zahra Khatirnamani [1], Sakine Beygom Kazemi [1], Mohammad Reza Honarvar [1], Sajad Moeini [1]

[1] Health Management and Social Development Research Center, Golestan University of Medical Sciences, Gorgan, Iran.

***Corresponding author and reprints: Alireza Heidari,** Assistant Professor, Health Management and Social Development Research Center, Golestan University of Medical Sciences, Gorgan, Iran.

Email: alirezaheidari7@gmail.com

Received: 18 Jun 2026 **Accepted:** 08 Nov 2026 **Published:** 17 Nov 2026

Abstract

Background: Continuous improvement in patient care relies heavily on robust service quality assessments. This study assessed the gap between patients' expectations and perceptions of outpatient service quality in hospitals operating under the electronic referral system in Golestan Province, Iran, using the SERVQUAL framework.

Methods: In this cross-sectional investigation, a systematic random sample of 384 outpatients transitioning from primary to secondary healthcare tiers via the electronic referral infrastructure was recruited across specialist hospital clinics in Golestan Province. Data were gathered through a standardized and validated SERVQUAL instrument. Statistical evaluations, including Wilcoxon procedures and Spearman correlations, were executed using SPSS 23.

Results: The mean age was 37.17 ± 14.54 years. The cohort was predominantly female (74.5%) and married (81.5%), with 24.9% having completed high school education. Statistical analysis revealed a significant discrepancy between patient expectations and their perceived quality across all SERVQUAL dimensions ($p<0.001$), indicating that expectations consistently exceeded actual experiences. The aggregate quality gap was measured at -0.43. Among the assessed dimensions, the empathy domain displayed the most substantial negative gap (-0.57), while tangibility recorded the least (-0.38). The item pertaining to 'paying special attention to each patient' yielded the highest disparity (-0.59) among all individual questions.

Conclusion: Patients' expectations exceeded their perceptions across all service quality dimensions, with the largest gaps observed in empathy and assurance. Strengthening service delivery through accreditation, clinical governance, and continuous quality improvement initiatives is recommended.

Keywords: Ambulatory Care, Electronic Referral System, Iran, Quality of Health Care, Referral and Consultation, SERVQUAL.

Cite this article as: Kabir MJ, Heidari A, Khatirnamani Z, Kazemi SB, Honarvar MR, Moeini S. Application of the SERVQUAL model to assess patients' experience with outpatient services in Northern Iran's electronic referral hospitals. *Soc Determinants Health*. 2026;12(1):1-11. DOI: http://dx.doi.org/10.22037/SDH.v12i1.45604

Introduction

Recent decades have witnessed a paradigm shift in global healthcare reforms, with service quality optimization emerging as a paramount objective for developed health systems (1). International directives, notably from the World Health Organization, underscore the necessity of maintaining rigorous

This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License

benchmarks in clinical service delivery (2). From a patient-centered perspective, quality is fundamentally defined by the degree to which provided care conforms to, or exceeds, legitimate patient expectations (3). Achieving this level of excellence necessitates a delivery model that is not only clinically effective and evidence-based but also prompt and reliable (4). Unlike the evaluation of tangible products, assessing healthcare quality involves a multifaceted analysis that incorporates both clinical outcomes and 'functional quality'—the interpersonal and service-related dynamics of patient care (1).

To quantify these elusive constructs, the SERVQUAL framework, originally conceived by Parasuraman et al., has become an industry standard for service quality assessment. By mapping the discrepancy between patient anticipation and service realization, this model provides a robust lens for evaluating care environments. Although historically derived from the commercial sector, its adaptation has been extensive in medical contexts, where it currently serves as one of the most frequently utilized instruments for analyzing patient satisfaction in developing nations (5).

The model categorizes service quality into five core dimensions: *tangibles* (the physical clinical environment, equipment, and staff appearance); *assurance* (the professional capability to foster trust and confidence); *responsiveness* (the swiftness and willingness of personnel to assist); *reliability* (the consistency of promised care delivery); and *empathy* (the individualized, patient-focused attention) (6). Through iterative validation, the finalized SERVQUAL instrument operationalizes these dimensions into a 22-item scale, thereby enabling a systematic analysis of the 'perceived quality gap' in healthcare settings (7).

Based on the recommendations from the World Health Organization, implementing a referral system centered around family physicians is crucial for enhancing healthcare efficiency. Such an approach helps improve cost management, elevate the quality of care, and ensure fair and equal access for all individuals (8).The referral system was implemented in Iran in 2005, and the government was bound to provide all villagers with health insurance services (9). The pilot eReferral system was implemented in three cities in the Golestan province: Bandar Turkmen, Aq-Qala, and Aliabad-Katoul. The preparation of electronic health records (EHRs) for individuals was considered an important priority of the Ministry of Health and Medical Education (MOHME) to solve the problems of the past manual referral system. Consequently, Golestan province, as one of the pioneers in launching the health information system, completed the EHR process through the design and implementation of the "healthcare information software" in 2013. Three levels were considered in the referral system. First-level services are provided by a unit in the health system such as the Rural or Urban Comprehensive Health Service Center and their subordinate health centers. The second level consists of specialized services that include diagnostic and treatment, i.e., outpatient and inpatient services. The third level includes highly specialized services provided by outpatient and inpatient healthcare units in the healthcare system, including emergency services, elective surgery and emergencies, clinical practice, pharmaceutical services and related products, and laboratory and medical imaging (10).

Research into the quality of healthcare services indicates a notable gap between what patients anticipate and the level of care they actually receive, especially when it comes to reliability. Key elements that significantly influence patient satisfaction include promptness of service, the competence and attitude of healthcare professionals, and the level of compassion and understanding demonstrated to patients (11-14). The study by Fan et al. conducted

This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License

at several selected hospitals in China (15), the study by Al Fraihi and Latif conducted in hospital outpatient waiting rooms in the eastern province of Saudi Arabia (16), along with studies by Adhami Moghadam et al. (17) and Haqshenas et al. (18) on outpatient and inpatient admissions in Tehran hospitals, indicated that there is a significant difference between patients' expectations and perceptions of health care services. Various studies have been also conducted in Iran aimed at determining the gap in quality service from patients' points of view, (19-21), but no studies have been conducted in Iran to evaluate the viewpoints of patients who have been referred to hospitals wherein the eReferral system is being performed.

Given that patients are in a good position to evaluate specific aspects of the therapeutic procedures, and understanding what patients demand from the health care system and the quality of services they are provided with, makes it easier for decision-makers to get to know about their expectations (17). This research offers valuable insights for shaping a theoretical framework for incorporating new metrics/indicators in patient satisfaction evaluation. Secondly, it contributes to the development of more effective and user-centered healthcare systems, thereby potentially influencing future healthcare policies and practices aimed at improving outpatient quality of life. This study analyzes the disparities in the quality of therapeutic services provided by hospitals in Golestan Province, northern Iran, focusing on facilities that have adopted the eReferral system.

Methods

Study Design and Setting

This study utilized a descriptive-analytical, cross-sectional approach and was conducted across three pilot cities in 2019: Bandar-e Torkaman, Aq-qala, and Aliabad-e Katul. All patients who received outpatient services after being referred from Level 1 (primary care centers) to Level 2 (specialized hospitals) via the established electronic health referral system were eligible for inclusion. Patients who were currently admitted (inpatients), presented as emergencies, or lacked recent experience using the e-referral pathway for their outpatient visit were excluded. Inclusion criteria consisted of willingness to participate in the study, while the exclusion criterion was inappropriate responses to the questionnaire items.

Participants and Recruitment

Incorporating parameters of $d = 0.4$, $\sigma^2 = 4$, $\beta = 0.2$, and $\alpha = 0.05$, and accounting for a 5% attrition rate, the final sample size was set at 402 participants. A stratified random sampling strategy was implemented, with allocations proportional to referral volume across three specialized hospitals (one per city) operating under the secondary-level family physician framework. With a target population encompassing three strata totaling approximately 11,004 individuals, sample quotas per city were determined based on the respective proportional referral frequency (Formula 2). Finally, 384 participants were enrolled in the study according to the inclusion and exclusion criteria. Eighteen participants were excluded due to inappropriate responses to the main questionnaire items (response rate: 96%). Study subjects were identified through hospital registration logs and electronic referral databases. Final participant selection was performed via systematic random sampling, utilizing the unique referral codes documented within the institutional system.

$$n = \frac{(z_{1-\frac{\alpha}{2}} + z_{1-\beta})^2}{d^2} \times 2\,\sigma^2 \quad \text{(Formula 1)}$$

$$n_h = N_h\left(\frac{n}{N}\right) \quad \text{(Formula 2)}$$

Instrumentation and Data Acquisition

The study utilized a structured, two-part survey instrument. The initial segment gathered comprehensive demographic data, while the second part comprised 30 Likert-type items designed to evaluate the discrepancy between patient expectations

This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License

and perceptions. To ensure comparative accuracy, both dimensions (Expectations and Perceptions) utilized identical thematic content, albeit with distinct linguistic formulations. The items were distributed across the five SERVQUAL dimensions as follows: three items each for Tangibles [1-3], Reliability [4-6], Responsiveness [7-9], and Assurance [10-13], and two items for Empathy [14-15]. Responses were quantified using a 5-point Likert scale, spanning from 'Strongly Disagree' (1) through 'Undecided' (3) to 'Strongly Agree' (5). The SERVQUAL questionnaire, previously adapted and validated for Iranian hospital settings by Heidarnia et al. was used as the basis for this study. For further indigenization, the instrument underwent forward-backward translation by four independent translators. Both content validity and face validity were subsequently assessed and confirmed. To determine construct validity and reliability, the questionnaire was administered to 200 inpatients at Taleghani Hospital in Tehran between January and March 2013, and their viewpoints were collected (22). Internal consistency was confirmed using the split-half method based on Guttman's split-half coefficient. Exploratory and Confirmatory Factor Analysis (EFA/CFA), along with correlation tests, were employed to test the dimensionality of both perception and expectation constructs. The two-construct measurement model showed an acceptable fit (CFMIN/DF = 3.897, CFI = 0.997) justifying the coding of perception and expectation items as two distinct factors. Instrument reliability was validated via a Cronbach's alpha coefficient of 0.91, confirming a high degree of internal consistency across items.

Data Analysis

Regarding data analysis, Service Quality (SQ) was quantified using the standard gap formula: SQ=Perceptions (P) −Expectations (E). In this framework, a negative SQ value reflects a service shortfall, while a positive outcome suggests that patient perceptions surpassed their initial expectations. Statistical processing was executed using IBM SPSS Statistics (v. 23). Data distribution was characterized using descriptive metrics, including frequencies, percentages, means, and standard deviations. To evaluate differences in mean scores, the Wilcoxon Signed-Rank test—a nonparametric procedure—was employed. Additionally, correlations between study variables were examined via Spearman's rank correlation coefficients, with statistical significance determined at an alpha level of 0.05 (α=0.05).

Ethical Considerations

Prior to data collection, the study objectives were thoroughly explained to all participants, and their voluntary informed consent was secured. Stringent measures were applied throughout the study to protect participant privacy and ensure the absolute confidentiality of personal identifiers. Furthermore, all research personnel involved in data acquisition underwent rigorous training, focusing specifically on ethical communication, patient rapport development, and the precise, standardized administration of the survey instrument.

Results

The demographic profile of the participants indicated that the majority were female (75.3%). Regarding marital status, 81.5% reported being married. The educational attainment showed that 26% had completed high school education. The primary occupation reported was housewife, accounting for 64.9% of the sample. The patients' average age was 37.2±14.5 years, with the largest age cohort (62.5%) falling between 30 and 60 years. Furthermore, 55.7% of the referred patients had required more than one referral. Regarding insurance status, 56.5% were covered by rural insurance. Among patients, the most common specialty visited was gynecology (18%). Table 1 summarizes the patients' demographic, clinical, and treatment-related characteristics.

This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License

Table 1. Descriptive and clinical characteristics of patients participating in the study

Variable	No (%) (n = 384)	Variable	No (%) (n = 384)
Sex		Hospital	
Male	95 (24.7)	Aq-Qala	196 (51.0)
Female	289 (75.3)	Aliabad Katul	113 (29.4)
Age (years)		Bandar Turkmen	75 (19.5)
≤ 5	2 (0.5)	Type of disease	
6-18	32 (8.3)	Women's diseases	69 (18.0)
19-29	80 (20.8)	Eye diseases	19 (4.9)
30-60	240 (62.5)	Orthopedics	26 (6.8)
> 60	30 (7.8)	Infectious diseases	27 (7.0)
Marital status		Endocrine and metabolic diseases	31 (8.1)
Single	58 (15.1)	Digestive diseases	44 (11.5)
Married	313 (81.5)	Mental illness	14 (3.6)
Divorced	6 (1.6)	Skin diseases	14 (3.6)
Widowed	7 (1.8)	Cardiovascular diseases	36 (9.4)
Education		Urology	13 (3.4)
Illiterate	71 (18.5)	Other	91 (23.7)
Elementary school	83 (21.6)	Type of health insurance	
Middle school	77 (20.1)	Rural	217 (56.5)
High school	100 (26.0)	Other health insurance funds	58 (15.1)
University	53 (13.8)	Social Security	84 (21.9)
Employment		Armed Forces	8 (2.1)
Former employee	25 (6.8)	Others	13 (3.4)
Manual worker	20 (5.5)	No insurance	4 (1.0)
self-employment	53 (14.5)	Visits	
Housewife	237 (64.9)	First time	170 (44.3)
Student	16 (4.2)	Several times	214 (55.7)
Unemployed	14 (3.8)		

A correlation analysis between patient expectations and their actual perceptions revealed significant associations across all five SERVQUAL dimensions ($p < 0.001$), as detailed in Table 2. Notably, the most robust correlation was identified within the Assurance domain ($r = 0.43$). Furthermore, the descriptive statistics for each individual item—encompassing both expectations and perceptions alongside their calculated service quality gaps (mean ± SD)—are comprehensively summarized in Table 3. At the item level, the most pronounced shortfall was identified regarding the provision of 'special attention to individual patients' (Gap = -0.60) in Empathy dimension. Further scrutiny of specific SERVQUAL dimensions revealed distinct areas of dissatisfaction: within the Tangibles domain, the deficiency was primarily linked to the 'utilization of state-of-the-art clinical equipment' (-0.48). In the Assurance category, the most significant deficit concerned 'managerial support for clinic staff' (-0.42), while in the Responsiveness dimension, the lack of 'readiness to assist patients' (-0.42) represented the primary concern. In the Reliability category, the most significant deficit concerned 'Providing timely services at the hospital clinic' (-0.52).The mean scores and standard deviations for both expectations and perceptions, alongside the resulting service quality (SQ) gaps for the overall sample, are detailed in Table 4.

Table 2. The relationship between expectations and perceptions in each of the five dimensions of the SERVQUAL model regarding service quality from the patients' perspective

Dimensions	Correlation coefficient	[CI for Correlation coefficient]	*p*-value
Tangibles	0.39	[0.29-0.48]	< 0.001
Reliability	0.41	[0.30-0.49]	< 0.001
Responsiveness	0.39	[0.29-0.49]	< 0.001
Assurance	0.43	[0.35-0.52]	< 0.001
Empathy	0.36	[0.25-0.45]	< 0.001

This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License

Table 3. Determining the service quality gap in each of the five dimensions of the SERVQUAL model in relation to service quality from the patients' perspective

Service Quality Dimensions	Expectations (1-5)			Perceptions (1-5)			Gap	
	Questions	Mean	SD*	Questions	Mean	SD	Mean	SD
Tangibles	1. Hospital clinics should use the latest equipment.	4.52	0.65	1. The clinic uses the latest equipment.	4.04	0.95	-0.48	1.03
	2. The physical facilities of the clinics, such as the building, the physicians' office, the lounge, should look attractive.	4.39	0.62	2. The physical facilities of the clinic, such as the building, the physicians' office and the lounge, are beautiful and attractive.	4.10	0.69	-0.29	0.73
	3. The clinic staff should have a clean and tidy look.	4.50	0.62	3. The clinic staff have a clean and tidy look.	4.16	0.75	-0.34	0.76
Reliability	4. Clinics must perform their services in a timely manner.	4.43	0.62	4. The hospital clinic performs its services on a timely basis.	3.91	0.91	-0.52	0.96
	5. When patients face problems, clinic staff should be caring and reassuring.	4.51	.61	5. When patients face problems, clinic staff are caring and reassuring.	4.00	0.96	-0.51	0.96
	6. The clinic must be careful in calculating the cost.	4.53	0.63	6. The hospital clinic is careful in calculating the cost.	4.24	0.71	-0.29	0.73
Responsiveness	7. Clinic staff should inform the patients about the exact time they receive their required services.	4.29	0.76	7. Clinic staff inform patients about the exact time they will receive their required services.	3.96	0.86	-0.33	0.01
	8. It is realistic for patients to expect hospital staff to provide services promptly.	4.31	0.63	8. The staff at the clinic provide the patients with their required services promptly.	3.88	0.98	-0.43	0.94
	9. Clinic staff should always be ready to help patients.	4.46	0.60	9. Clinic staff are always ready to help patients.	4.02	0.87	-0.44	0.83
Assurance	10. Patients should feel safe when interacting with clinic staff.	4.51	0.59	10. Patients feel safe when interacting with clinic staff.	4.10	0.86	-0.41	0.87
	11. Clinic staff should be skilled and aware of their task.	4.55	0.56	11. The staff at the clinic are skilled and aware of their work.	4.14	0.88	-0.41	0.85
	12. Clinic staff should be courteous.	4.55	0.56	12. Clinic staff are courteous.	4.17	0.83	-0.38	0.84
	13. Clinic staff must be sufficiently supported by hospital administrator to perform their duties properly.	4.34	0.56	13. Clinic staff are provided with sufficient support by hospital administrator to perform their duties properly.	3.92	0.80	-0.42	0.85
Empathy	14. Clinic staff are expected to treat patients individually.	4.32	0.67	14. Clinic staff treat patients individually.	3.72	1.03	-0.60	1.04
	15. It is realistic to expect clinic staff to think wholeheartedly about patients' interests.	4.37	0.61	15. Clinic staff are wholeheartedly interested in the patients' interests.	3.82	1.00	-0.55	1.01

* SD: Standard deviation

Comparative analysis confirmed a statistically significant divergence between patient expectations and their actual service experiences across the entire cohort ($p<0.001$). In all evaluated dimensions, expectation scores consistently exceeded perception scores, substantiating the existence of performance shortfalls. The Empathy dimension recorded the most substantial negative gap (-0.57), whereas the Tangibility dimension demonstrated the narrowest deficit (-0.38). These disparities are visually mapped in Figure 1, which clearly illustrates the disproportionate nature of the performance shortfall, particularly within the Empathy dimension.

Applying the Kruskal-Wallis nonparametric analysis, the study evaluated the influence of various demographic and clinical factors on service quality gap scores. The analysis indicated that variables including age, marital status, occupational background, frequency of outpatient visits, insurance coverage, and underlying disease type did not exert a

Table 4. Descriptive results and the relationship between expectations and perceptions in each of the five dimensions of the SERVQUAL model

Dimensions	Expectation		Perception		Gap		Wilcoxon test	
	Mean	Standard deviation	Mean	Standard deviation	Mean [CI for Mean]	Standard deviation	Z	*p*-value
Total	4.44	0.45	4.01	0.63	-0.43 [-0.48—0.37]	0.56	-13.63	< 0.001
Tangibles	4.47	0.55	4.10	0.65	-0.37 [-0.44—0.31]	0.67	-10.07	< 0.001
Reliability	4.49	0.53	4.05	0.72	-0.44 [-0.51—0.37]	0.72	-11.04	< 0.001
Responsiveness	4.35	0.53	3.95	0.76	-0.40 [-0.47—0.33]	0.76	-10.09	< 0.001
Assurance	4.49	0.48	4.08	0.69	-0.41 [-0.47—0.34]	0.69	-10.89	< 0.001
Empathy	4.34	0.58	3.77	0.93	-0.57 [-0.66—0.48]	0.93	-10.59	< 0.001

This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License

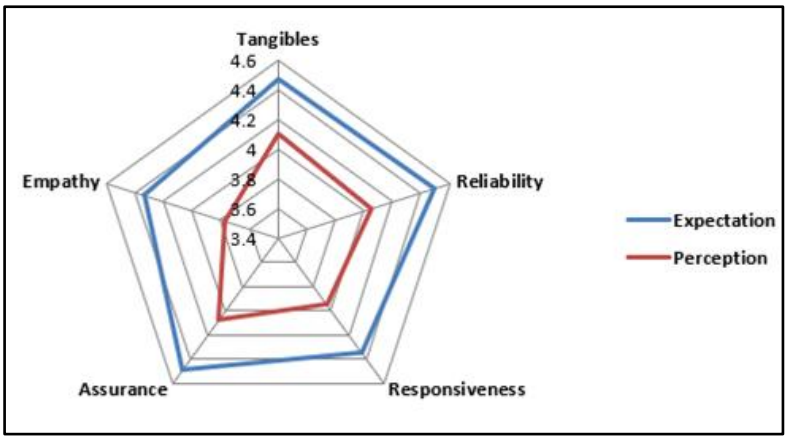


Figure 1. Displaying the gap between patients' perceptions and expectations of the quality of services provided using the RADAR chart

statistically significant impact on the quality gap (P>0.05). Conversely, patient gender (P=0.005) and educational level (P=0.028) were identified as significant determinants, with female respondents and those with restricted formal schooling reporting the most substantial service discrepancies. Additionally, statistically significant variations in service quality gaps were observed across the regional hospital centers (P=0.028), among which Aq-qala County exhibited the most pronounced service quality shortfall.

Discussion

The findings revealed consistently negative SERVQUAL gaps across all service quality dimensions, indicating that patients' perceptions of healthcare services fell below their expectations. These findings suggest a discrepancy between expected and experienced service delivery rather than providing direct evidence of poor absolute service quality. This distinction is important because negative SERVQUAL scores reflect the extent to which perceived performance falls short of expectations and should not be interpreted independently as a comprehensive measure of the actual quality of care. Nevertheless, the consistency of these gaps across all dimensions highlights areas in which healthcare services may require improvement. These results are congruent with previous studies (23-28), which similarly reported significant differences between patients' expectations and perceptions. Accordingly, periodic assessment of hospital service quality using both patient expectations and perceptions may help the Iranian Ministry of Health and Medical Education identify areas requiring greater attention and guide quality improvement initiatives.

The most substantial service quality gap was identified in the Empathy dimension. This finding is consistent with several previous studies (29-30) and highlights the importance of interpersonal attention and individualized care in patients' evaluations of healthcare services. The largest item-level gaps were observed in the statements concerning whether clinic staff give special attention to each patient and whether they genuinely consider patients' interests. These findings suggest that patients place considerable importance on feeling understood, respected, and individually attended to during healthcare encounters. Illness-related anxiety, fear, and stress may further increase the importance of supportive interactions and effective communication with healthcare personnel (31). However, the observed gaps do not establish the absence of emotional support or specific institutional protocols; rather, they indicate that patients' experiences in this dimension did not fully meet their expectations. In this context, providing clear and understandable explanations about diseases and treatment procedures may contribute to more effective patient–provider communication (19).

This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License

The Reliability dimension demonstrated the second-largest gap, indicating that patients' perceptions of the consistency and dependability of healthcare services were also below their expectations. Factors such as fulfilling commitments, providing services correctly from the first encounter, and maintaining truthful and transparent communication are important aspects of patients' evaluations of reliability (32). During illness, timely and accurate information about diagnostic procedures and expected treatment duration may help address patients' informational needs and improve their experience of care (33). These findings point to the potential value of strengthening communication practices and ensuring greater consistency in the delivery of healthcare services. Nevertheless, the SERVQUAL results alone cannot determine whether these discrepancies originate from individual staff performance, organizational processes, or broader structural factors.

The smallest discrepancy was observed in the Tangibility dimension. This finding suggests that patients' perceptions of the physical environment and visible aspects of healthcare services were relatively closer to their expectations than those of the other dimensions. However, a smaller gap should not necessarily be interpreted as evidence of satisfactory absolute performance in this dimension. Although clinic cleanliness, modern equipment, and the physical appearance of facilities contribute to patients' perceptions of healthcare services, these aspects represent only one component of the overall service experience. This finding is consistent with the study conducted by Fan et al. (15).

The relationship between perceived service quality and patient satisfaction has been highlighted in previous research (34). However, the interpretation of the present findings should remain specific to the constructs assessed in this study. In particular, negative SERVQUAL gaps and associations between expectations and perceptions should not be considered direct measures of patient satisfaction unless satisfaction is independently assessed. Furthermore, incorporating principles of social justice into healthcare research and practice remains important for promoting equitable access to and delivery of health services (35). Overall, the findings emphasize the importance of reliable service delivery, effective communication, and attentive interactions between healthcare personnel and patients.

From a practical perspective, the observed gaps may help identify priorities for future quality improvement initiatives. Given the relatively larger gap in Empathy, communication skills training for healthcare personnel may be a reasonable strategy to consider. Such training could emphasize active listening, respectful interactions, individualized attention, and appropriate responses to patients' concerns. Simulation-based educational approaches may also provide opportunities for staff to practice these communication skills in realistic clinical situations. Similarly, in view of the gap observed in Reliability, healthcare facilities could consider reviewing their existing procedures for communicating information about diagnoses, treatment stages, and follow-up care. The use of standardized communication guidelines or checklists may help promote consistency and ensure that patients receive understandable and relevant information. These proposed strategies should, however, be regarded as potential quality improvement approaches rather than interventions whose effectiveness has been established by the present study. Their implementation and impact would require further evaluation. At a broader level, artificial intelligence and digital health technologies may also offer opportunities to facilitate timely information delivery and more responsive healthcare services, although their potential contribution to patient-centered care requires further investigation.

This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License

Study Limitations and Future Directions

Despite its methodological rigor, this study has certain limitations that should be considered when interpreting the findings. Due to the operational scope of the eReferral system in 2019, the study was geographically confined to three cities, focusing exclusively on primary and secondary level outpatient services. Consequently, the generalizability of the results to the broader provincial population is limited. To enhance generalizability, subsequent research should adopt a province-wide approach, incorporating both inpatient and outpatient settings, as well as primary care physician (PCP) perspectives. Furthermore, while the SERVQUAL instrument is a validated tool, it may not capture the full spectrum of patient expectations; thus, future studies could benefit from a mixed-methods approach, integrating qualitative insights to provide a more nuanced understanding of service quality. Finally, potential biases—including selection bias from the sampling framework, recall bias regarding perceived care, and confounding variables such as digital literacy and socioeconomic status—should be accounted for in future investigative models.

Conclusion

This study demonstrates a persistent service quality deficit, as patient expectations across all domains consistently outstripped their perceived experiences. The Empathy dimension emerged as the primary area of critical concern, contrasting with Tangibility, which recorded the narrowest shortfall. Given these systemic discrepancies, it is imperative that healthcare administrators utilize these quality metrics as the foundation for strategic resource allocation and operational decision-making. By prioritizing these evidence-based insights, health systems can better align service delivery with patient requirements and effectively bridge the existing quality gaps.

Acknowledgements

We are grateful to the study participants for their time and viewpoints.

Authors' contribution

Mohammad Javad Kabir and Alireza Heidari developed the study concept and design. Sakine Beygom Kazemi and Mohammad Reza Honarvar acquired the data. Zahra Khatirnamani analyzed and Sajad Moeini interpreted the data, and wrote the first draft of the manuscript. All authors contributed to the intellectual content, manuscript editing and read and approved the final manuscript.

Informed consent

Participation in this research was contingent upon the provision of informed consent by all subjects, and data were handled confidentially, ensuring anonymity by excluding any personally identifiable details during analysis.

Ethical Approval

The Golestan University of Medical Sciences Ethics Committee formally reviewed and authorized this research protocol under the registration number IR.GOUMS.REC.1397.298.

Funding/financial support

This research has been supported by Golestan University of Medical Sciences and Health Services grant 110602.

Conflict of interest

The authors declare no potential conflict of interest with respect to research, authorship, and/or publication of this article.

References

1. Goula A, Stamouli MA, Alexandridou M, Vorreakou L, Galanakis A, Theodorou G, Stauropoulos E, Kelesi M, Kaba E. Public Hospital Quality Assessment. Evidence from Greek Health Setting Using SERVQUAL Model. Int J Environ Res Public Health. 2021 Mar 25; 18(7):3418.
2. Jonkisz A, Karniej P, Krasowska DM. Meeting Patient Expectations: Assessing Medical Service and Quality of Care Using the SERVQUAL Model in Dermatology

This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License

Patients at a Single Center in Poland. Med Sci Monit. 2023 Aug 13; 29:e941007.

3. Asare AA, Otchi E, Manu A. Relevance of meeting general outpatients' information needs to their perceptions of healthcare quality in a hospital in Ghana: a Healthcare Quality Survey using modified SERVQUAL analysis. BMJ Open Qual. 2024 Jun 10;13(2):e002683.
4. Sharka R, Sedayo L, Morad M, Abuljadayel J. Measuring the impact of dental service quality on revisit intention using an extended SERVQUAL model. Front Oral Health. 2024 Apr 12;5:1362659.
5. Lin Q, Hao HS, Zhang D. Assessing Quality Gap of Outpatient Service in Public Hospitals: A Cross-Sectional Study in China. Inquiry. 2023 Jan-Dec;60:469580231162527.
6. Parasuraman A, Zeithaml VA, Berry LL. A conceptual model of service quality and its implications for future research. Journal of marketing. 1985 Sep;49(4):41-50.
7. Parasuraman A, Zeithaml VA, Berry LL. Servqual: A multiple-item scale for measuring consumer perc. Journal of retailing. 1998;64, 12.
8. Kidd M. Quality and equity and global family medicine: perspectives from Latin America. Bangkok, Thailand: WONCA. 2015. Avilabe at: https://www.wonca.net/AboutWonca/PresidentsBlog/QualityandEquityandGlobalFamilyMedicineperspectivesfromLati.aspx>.
9. Babazadeh Gashti A, Jafari N, Kabir MJ, Heidari A, Behnampour N, Honarvar MR, Pourabbasi MA, Eri M. Assessing rural family physicians performance according to healthcare managers, family physicians, and patients in Golestan province, Iran. Journal of Mazandaran University of Medical Sciences. 2016 Jan 15;25(132):23-32.
10. The forth development plan act of government .Implementation Guidelines for Family Physician and Rural Insurance Program. Available at: <http://health.sbmu.ac.ir/uploads/instruction_18.pdf>[Accessed 7 March 2020].
11. Monteiro, N.J.; Lima Amorim, L.T.; Vidal Nogueira, L.M.; Ataíde Rodrigues, I.L.; André, S.R. Evaluation of the collection service for colposcopy by the SERVQUAL scale. Rev. Bras. Enferm. 2019, 72, 118–124.
12. Borowska, M.; Religioni, U.; Augustynowicz, A. 'Patients' Opinions on the Quality of Services in Hospital Wards in Poland. Int. J. Environ. Res. Public Health 2023, 20, 412.
13. Kim, S.; Kim, H.-S. A Study on the Effect of Medical Service Quality on Customer Satisfaction during COVID-19 for Foreigners in Korea. Sustainability 2023, 15, 5953.
14. Al Awadh, M. Utilizing Multi-Criteria Decision Making to Evaluate the Quality of Healthcare Services. Sustainability 2022, 14, 12745.
15. Fan LH, Gao L, Liu X, Zhao SH, Mu HT, Li Z, Shi L, Wang LL, Jia XL, Ha M, Lou FG. Patients' perceptions of service quality in China: An investigation using the SERVQUAL model. PloS one. 2017 Dec 22;12(12): e0190123.
16. Al Fraihi KJ, FAMCO D, Latif SA. Evaluation of outpatient service quality in Eastern Saudi Arabia: Patient's expectations and perceptions. Saudi medical journal. 2016 Apr;37(4):420.
17. Adhami Mogadam F, Sahebalzamani M, Rouhafza M. Gap Analysis of Service Quality from Bedridden Patient's Point of view at Hospitals of Tehran Medical Sciences Islamic Azad University. Journal of healthcare management. 2017 Aug 23;8(2):21-32.
18. Haghshenas E, Arab M, RAHIMI FA, Movahed E. Assessing the quality of services provided at outpatient clinics among hospitals affiliated to Tehran University of Medical Sciences based on SERVQUAL Model in 2015.2017;16(2), 9-17.
19. Esmaeili Shahmirzadi S, Shojaeizadeh D, Moradian Sorkhklaei M, Lashgarara B, Tarahi MJ, Taheri G. Comparing the quality of the provided services in public health sites with collaborative health sites. Journal of Health System Research. 2013 Feb 10;8(7):1225-34.
20. Khaki MH, Kargar M, Parham M, Mohebi S. Survey the quality of provided services in out-patient's clinics of Shiraz training hospitals based on the model of SERVQUAL in 2014. Iranian Journal of Nursing Research. 2015 Sep 10;10(3):81-8.
21. Tabibi SJ, Gohari MR, Shahri S, Aghababa S. Assessment of Health Care Services in outpatient clinics based on SERVQUAL model in Hospitals of Tehran. Journal of Payavard Salamat. 2012 Jan 10;5(4):49-56.
22. Heidarnia MA, Riazi-Isfahani S, Abadi A, Mohseni M. Cross cultural adaptation and assessing validity and reliability of SERVQUAL questionnaire in hospital service quality. Research in medicine. 2014 Aug 10;38(2):98-105.
23. Isfahani P, Shamsaie M. Quality of Services in the Hospitals of Iran: A Systematic Review and Meta-Analysis. Health and Development Journal. 2020 Feb 1;8(4):357-70.
24. Gilavand A, Torabipour A. The quality of services of Iran University hospitals based on SERVQUAL's evaluation model: a systematic review and meta-analysis. Frontiers in Public Health. 2022 Apr 18; 10:838359.

This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License

25. Al-Balas SM, Al-Maqableh HO, Athamneh S, Odeibat AM. Quality status: A SERVQUAL approach to evaluate the effect of the quality of healthcare services on patient satisfaction in Jordan. International Journal of Healthcare Management. 2025 Apr 3;18(2):351-67.

26. Majlesi M, Yadegarfar G, Soudavi M, Khorasabi E, Zakeri P, Baghaei T, Sharifi Faradonbeh N. Perceived service quality delivered to adult chronic hemodialysis patients in public and charity hospitals based on Servqual model. J Shahrekord Univ Med Sci. 2018; 20(5):116-128.

27. Haghshenas E, Arab M, Rahimi A, Movahed E. Assessing the quality of services provided at outpatient clinics among hospitals affiliated to Tehran University of Medical Sciences based on SERVQUAL Model in 2015. JHOSP 2017; 16 (2):9-17.

28. Rajabi E, Memrabashi E, Asadi F, Arasteh A. Assessment of Healthcare Service Quality in Public (Governmental) Teaching Hospitals of Ferdows using the HEALTHQUAL Model. Journal of Health Research in Community. Winter 2025; 10(4):48-57.

29. Bakhteari Z, Hanifi N, Amini K, Jafari Varjoshani N. Quality of Nursing Services in Dialysis Center of Valiasr Hospital in Zanjan from Nurses and Patients' Viewpoint Using the SERVQUAL Model. IJN 2018; 31 (113):18-29

30. Bahadori M, Raadabadi M, Jamebozorgi MH, Salesi M, Ravangard R. Measuring the quality of provided services for patients with chronic kidney disease. Nephro-urology monthly. 2014; 6(5):1- 7.

31. Rasoulivalajoozi M, Touir G. Spinal fusion surgery for high-risk patients: a review of hospitals information. Social Determinants of Health. 2023; 9:1-2.

32. Cucuzzella C, Rasoulivalajoozi M, Farzamfar G. Spatial experience of cancer inpatients in the oncology wards: A qualitative study in visual design aspects. European Journal of Oncology Nursing. 2024 Jun 1; 70:102552.

33. Ameryoun A, Dopeykar N, Nasiri T, Meskarpour Amiri M, Gholami Fesharaki M, Karamali M. Assessment the gap between patients' expectations and the services provided to them in selected hospitals of Tehran in 2012. Journal of Police Medicine. 2013;2(1):1-0.

34. Lim J, Lim K, Heinrichs J, Al-Aali K, Aamir A, Qureshi M. The role of hospital service quality in developing the satisfaction of the patients and hospital performance. Management Science Letters. 2018;8(12):1353-62.

35. Suslovic B, Lett E. Resilience is an adverse event: A critical discussion of resilience theory in health services research and public health. Community Health Equity Research & Policy. 2024 Apr;44(3):

This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License