



Analysis of Healthcare Service Quality on Patient Satisfaction: A SERVQUAL Method in the Radiology Department

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ARTICLE INFO

Article Type:
Research

Article History:
Received: 20 February 2026
Accepted: 20 August 2026
Published: 30 September 2026

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ORIGINAL ARTICLE

ABSTRACT

Patient satisfaction reflects the comparison between expectations and experiences of healthcare services. This study aimed to describe patients' perceptions of radiology service quality and satisfaction using the SERVQUAL framework. A descriptive quantitative study involved 80 patients who had undergone radiological examinations. Data were collected using a structured questionnaire covering five SERVQUAL dimensions and a four-point Likert scale. Univariate analysis described respondent characteristics and dimension scores, while the Mann-Whitney U test examined differences in overall service quality scores by gender, age, and payment type, with statistical significance set at $p < 0.05$. Most respondents were female (61.3%), aged ≥ 20 years (86.3%), and covered by National Health Insurance (73.8%). Very high satisfaction was reported across all dimensions, ranging from 87.5% for responsiveness to 93.8% for tangibles and assurance. Mean scores ranged from 3.84 to 3.89. Reliability and assurance received the highest scores (3.89 ± 0.26 each), followed by empathy (3.88 ± 0.26), tangibles (3.85 ± 0.26), and responsiveness (3.84 ± 0.31). The overall service quality score was 3.87 ± 0.25 . No significant differences were found by gender ($p = 0.77$), age ($p = 0.33$), or payment type ($p = 0.17$). Patients reported highly favorable perceptions of radiology services. Reliability and assurance were rated highest, whereas responsiveness received the lowest score. Overall service quality did not differ significantly across respondent characteristics.

Keywords: Patient Satisfaction, Service Quality, SERVQUAL Method.

ABSTRAK

Kepuasan pasien mencerminkan perbandingan antara harapan dan pengalaman terhadap pelayanan kesehatan. Penelitian ini bertujuan mendeskripsikan persepsi pasien terhadap kualitas pelayanan dan kepuasan di instalasi radiologi menggunakan kerangka SERVQUAL. Penelitian kuantitatif deskriptif melibatkan 80 pasien yang telah menjalani pemeriksaan radiologi. Data dikumpulkan menggunakan kuesioner terstruktur yang mencakup lima dimensi SERVQUAL dengan skala Likert empat poin. Analisis univariat digunakan untuk mendeskripsikan karakteristik responden dan skor setiap dimensi, sedangkan uji Mann-Whitney U digunakan untuk menganalisis perbedaan skor kualitas pelayanan berdasarkan jenis kelamin, usia, dan jenis pembayaran, dengan signifikansi statistik ditetapkan pada $p < 0,05$. Sebagian besar responden adalah perempuan (61,3%), berusia ≥ 20 tahun (86,3%), dan menggunakan Jaminan Kesehatan Nasional (73,8%). Tingkat kepuasan sangat tinggi ditemukan pada seluruh dimensi, berkisar antara 87,5% pada daya tanggap hingga 93,8% pada bukti fisik dan jaminan. Skor rata-rata berkisar antara 3,84 dan 3,89. Keandalan dan jaminan memperoleh skor tertinggi (masing-masing $3,89 \pm 0,26$), diikuti empati ($3,88 \pm 0,26$), bukti fisik ($3,85 \pm 0,26$), dan daya tanggap ($3,84 \pm 0,31$). Skor kualitas pelayanan keseluruhan adalah $3,87 \pm 0,25$. Tidak ditemukan perbedaan signifikan berdasarkan jenis kelamin ($p = 0,77$), usia ($p = 0,33$), atau jenis pembayaran ($p = 0,17$). Pasien memiliki persepsi sangat positif terhadap pelayanan radiologi. Keandalan dan jaminan memperoleh penilaian tertinggi, sedangkan daya tanggap terendah. Kualitas pelayanan keseluruhan tidak berbeda signifikan berdasarkan karakteristik responden.

Kata Kunci: Kepuasan Pasien, Kualitas Layanan, Metode SERVQUAL.

INTRODUCTION

Health is a fundamental human right and a cornerstone of national development (Binagwaho & Mathewos, 2023; WHO, 2018). Many constitutions and international frameworks recognize access to quality healthcare as an essential component of social welfare and human capital investment (Santos et al., 2024). Strengthening healthcare systems is, therefore, not only a public service obligation but also a strategic investment in sustainable socioeconomic development (Ugwu et al., 2025). In this context, improving service quality within healthcare institutions has become a global priority.

Public services, including healthcare, are designed to meet citizens' basic needs in accordance with established legal, ethical, and professional standards. Among various healthcare services, radiology plays a critical role as a diagnostic and interventional support unit (Almuhanha et al., 2025). Radiology services encompass radiodiagnostics, diagnostic imaging, and interventional radiology procedures that utilize ionizing and non-ionizing radiation to support accurate disease diagnosis and clinical decision-making (Lastrucci et al., 2025). Given its central function in patient management pathways, the quality of services delivered in radiology departments significantly influences overall patient experience and institutional reputation (Kambala et al., 2022).

Service quality in healthcare is commonly defined as the degree to which health services meet or exceed patient expectations while adhering to professional standards and ethical principles (Al-Assaf et al., 2024; Murray & Barnes, 2023). Patient satisfaction has consequently emerged as a key performance indicator for healthcare organizations, reflecting both perceived quality and service effectiveness (Ferreira et al., 2023). Higher levels of patient satisfaction are associated with improved patient loyalty, positive word-of-mouth communication, and increased utilization of services (Fairaq et al., 2025; Puspita & Paramata, 2024). Conversely, dissatisfaction may reduce the intention to revisit and damage institutional credibility.

The SERVQUAL model remains one of the most widely applied frameworks for assessing service quality (Rahmatia et al., 2025; Wider et al., 2024). It evaluates five dimensions: responsiveness, assurance, tangibles, empathy, and reliability. Previous studies have applied SERVQUAL in various healthcare settings and generally reported favorable associations between perceived service quality and patient satisfaction. However, findings have varied across institutions due to differences in organizational resources, patient volume, service processes, and local healthcare contexts. Consequently, evidence from one healthcare facility cannot be assumed to represent service quality perceptions in another setting, highlighting the need for institution-specific evaluations.

The radiology department examined in this study serves as an essential diagnostic unit that supports clinical decision-making across multiple specialties. As radiology services involve direct patient interaction, scheduling processes, waiting times, technical procedures, and communication regarding examinations, patient perceptions may be influenced by factors that differ from those in other hospital units. Although service quality assessments have been conducted in various healthcare departments, limited evidence is available regarding patient perceptions of service quality within this radiology installation. Furthermore, no recent evaluation has comprehensively assessed patient perceptions across all five SERVQUAL dimensions in this setting.

Therefore, this study aims to describe patients' perceptions of service quality in the radiology department using the SERVQUAL framework. By providing local evidence on patient evaluations of responsiveness, assurance, tangibles, empathy, and reliability, this study contributes context-specific information that can support quality improvement initiatives, service monitoring, and managerial decision-making within the radiology department.

RESEARCH METHODS

This study employed a descriptive cross-sectional design with a quantitative approach to assess service quality and patient satisfaction in the Radiology Installation of RSUD X, Jakarta. Data collection was conducted over a two-month period from April to May 2025. The study focused on patients receiving radiological services, including conventional radiography, computed tomography (CT-scan), and ultrasonography (USG).

The study population comprised all patients who underwent radiological examinations at the Radiology Installation during the study period, totaling 200 individuals. A sample size of 80 respondents (40% of the population) was selected using a non-probability convenience sampling technique, based on patients who met the inclusion criteria and were willing to participate. Eligible participants were adult patients who had completed their radiological examination and were able to provide informed consent and respond to the questionnaire.

Data were collected using a structured, self-administered questionnaire developed based on the SERVQUAL framework. The instrument consisted of two sections: (1) respondents' demographic characteristics (age, gender, and type of payment), and (2) 20 statements measuring five SERVQUAL dimensions—responsiveness, assurance, tangibles, empathy, and reliability. Each dimension was represented by four items.

Responses were measured using a four-point Likert scale: 4 = very satisfied, 3 = satisfied, 2 = less satisfied, and 1 = dissatisfied. The use of a four-point scale was intended to minimize neutral responses and encourage clear evaluation. Before data collection, the questionnaire was reviewed for content validity to ensure clarity and relevance of items. In addition to questionnaire distribution, limited field observations were conducted to support contextual understanding of service delivery processes.

Data were analyzed using descriptive statistical methods. Univariate analysis was performed to calculate the mean score for each SERVQUAL dimension. The mean values were subsequently categorized according to predetermined Likert scale intervals to determine levels of patient satisfaction. Results were presented in tabular and narrative form to provide a comprehensive description of service quality perceptions in the radiology department. This study was approved by the Health Research Ethics Committee of Poltekkes Kemenkes Jakarta II with no ethical approval: DP.04.03/I/KE/30/433/2025.

RESULTS

The results constitute the main part of the scientific article, containing the outcomes of data analysis and hypothesis testing. They may be presented using tables or graphs to clarify the findings verbally.

Table 1. Frequency Distribution of Respondents' Characteristics.

Characteristics	Frequency (N= 80)	%
Gender		
Male	31	38.8
Female	49	61.3
Age		
<20	11	13.8
≥20	69	86.3
Payment type		
National Health Insurance	59	73.8
Self-sufficient	21	26.3

Table 1 presents the frequency distribution of respondents' characteristics (N = 80). Based on gender, the majority of respondents were female (49 individuals; 61.3%), while male respondents accounted for 31 individuals (38.8%). This indicates that radiology service utilization during the study period was higher among female patients.

In terms of age distribution, most respondents were aged 20 years or older (69 individuals; 86.3%), whereas only 11 respondents (13.8%) were under 20 years of age. This suggests that radiological examinations in the study setting were predominantly performed on adult patients.

Regarding payment type, the majority of patients used National Health Insurance (59 individuals; 73.8%), while 21 respondents (26.3%) were self-paying patients. This finding indicates that most radiology service users relied on public health insurance coverage rather than out-of-pocket payment. Overall, the respondent profile shows that the typical radiology patient in this study was an adult female covered by National Health Insurance.

Table 2. Frequency Distribution of Respondents by Service Quality Dimension.

Satisfaction Dimensions	Very Satisfied		Satisfied		Less Satisfied		Dissatisfied	
	n	%	n	%	n	%	n	%
Responsiveness	70	87.5	10	12.5	-	-	-	-
Tangible	75	93.8	5	6.3	-	-	-	-
Reliability	73	91.3	7	8.8	-	-	-	-
Assurance	75	93.8	5	6.3	-	-	-	-
Empathy	74	92.5	6	7.5	-	-	-	-

Table 2 shows that most respondents were very satisfied with the quality of radiology services across all five dimensions. The highest proportion of very satisfied respondents was observed for tangibles and assurance (93.8% each), followed by empathy (92.5%), reliability (91.3%), and responsiveness (87.5%). Only 6.3%–12.5% of respondents reported being satisfied, while none reported being less satisfied or dissatisfied.

Table 3. Mean Scores of the Five SERVQUAL Dimensions and Overall Service Quality Score

Service Quality Dimension	Number of Items	Mean $\pm$ SD	Minimum	Maximum
Responsiveness	4	3.84 $\pm$ 0.31	3	4
Tangible	4	3.85 $\pm$ 0.26	3	4
Reliability	4	3.89 $\pm$ 0.26	3	4
Assurance	4	3.89 $\pm$ 0.26	3	4
Empathy	4	3.88 $\pm$ 0.26	3	4
Overall Service Quality Score	20	3.87 $\pm$ 0.25	3	4

Table 3 shows that all five SERVQUAL dimensions had high mean scores, ranging from 3.84 to 3.89 on a 4-point scale. Reliability and assurance had the highest mean scores (3.89 $\pm$ 0.26 each), while responsiveness had the lowest (3.84 $\pm$ 0.31). The overall service quality score was 3.87 $\pm$ 0.25, with scores ranging from 3 to 4.

Table 4. Association Between Respondents' Characteristics and Overall Service Quality

Characteristics	Overall Service Quality Score, Mean $\pm$ SD	p-value*
Gender		
Male	3.91 $\pm$ 0.15	0.77
Female	3.84 $\pm$ 0.28	
Age		
<20	3.82 $\pm$ 0.24	0.33
$\geq$ 20	3.87 $\pm$ 0.24	
Payment type		
National Health Insurance	3.88 $\pm$ 0.23	0.17
Self-sufficient	3.83 $\pm$ 0.28	

*Mann-Whitney t-test

As shown in Table 4, the overall service quality score did not differ significantly according to respondents' gender, age, or payment type. Male respondents had a slightly higher mean overall service quality score than female respondents (3.91 $\pm$ 0.15 vs. 3.84 $\pm$ 0.28), although this difference was not statistically significant ($p = 0.77$). Similarly, respondents aged $\geq$ 20 years had a slightly higher mean score than those aged <20 years (3.87 $\pm$ 0.24 vs. 3.82 $\pm$ 0.24), with no statistically significant difference ($p = 0.33$). Regarding payment type, respondents covered by National Health Insurance had a higher mean overall service quality score than self-sufficient respondents (3.88 $\pm$ 0.23 vs. 3.83 $\pm$ 0.28); however, this difference was also not statistically significant ($p = 0.17$).

DISCUSSION

This study assessed patient satisfaction with radiology services using the SERVQUAL framework. Overall, respondents reported highly favorable perceptions across all five dimensions: responsiveness, tangibles, reliability, assurance, and empathy. The mean scores ranged from 3.84 to 3.89 on a four-point scale, while the overall service quality score was 3.87 ± 0.25 . These findings indicate a consistently positive perception of radiology service quality among the respondents included in this study.

The responsiveness dimension had the lowest mean score among the five dimensions (3.84 ± 0.31), although the score remained within the high satisfaction range. Most respondents (87.5%) reported being very satisfied, while the remaining 12.5% reported being satisfied. In radiology services, responsiveness may be particularly important because patients may experience anxiety, discomfort, or uncertainty before and during diagnostic procedures. Prompt assistance, clear communication, and timely responses to patient needs may therefore contribute to a positive service experience (Hughes et al., 2025). Previous studies have similarly emphasized the importance of responsiveness and effective communication in shaping patients' perceptions of healthcare service quality (Alqudah et al., 2022; Brooks Carthon et al., 2021; Firgie et al., 2024).

Tangibles had a mean score of 3.85 ± 0.26 , with 93.8% of respondents reporting being very satisfied. This dimension includes aspects such as the physical appearance of facilities, equipment, cleanliness, and the overall physical environment of the service unit. The high score observed in this study suggests that respondents had favorable perceptions of the physical aspects of radiology services. In technology-intensive healthcare settings such as radiology departments, the condition of equipment and facilities may influence patients' perceptions of professionalism, safety, and institutional quality (Shetty et al., 2024). Clean examination rooms, adequate waiting areas, appropriate signage, and well-maintained equipment may therefore contribute to a positive patient experience.

Reliability had one of the highest mean scores (3.89 ± 0.26), with 91.3% of respondents reporting being very satisfied. Reliability reflects the perceived ability of healthcare personnel to provide services accurately, consistently, and as promised. In radiology services, reliability is particularly relevant because diagnostic procedures require accuracy, consistency, and adherence to established procedures. Correct patient identification, appropriate positioning, accurate implementation of imaging procedures, and consistent service delivery may contribute to patients' confidence in the service (Alharbi et al., 2025; Pelawi et al., 2024). The high reliability score in this study suggests that respondents generally perceived radiology services as dependable. Nevertheless, patient-reported reliability should be distinguished from objective measures of diagnostic accuracy or technical performance.

Assurance also received a high mean score (3.89 ± 0.26), with 93.8% of respondents reporting being very satisfied. This dimension reflects patients' perceptions of staff knowledge, courtesy, professionalism, and their ability to instill confidence.

In radiology services, assurance may be particularly important because patients may have concerns about diagnostic procedures, unfamiliar equipment, or radiation exposure. Clear explanations, courteous communication, and professional conduct can help reduce uncertainty and increase patient confidence. Previous research has highlighted the importance of communication and interpersonal interactions in creating trust in healthcare settings (Athuman & Tibategeza, 2021; Kwame & Petrucka, 2021).

Empathy had a mean score of 3.88 ± 0.26 , with 92.5% of respondents reporting being very satisfied. This finding indicates that most respondents perceived the radiology service as attentive and respectful of their individual needs.

Empathy is particularly relevant in healthcare because patients may have different levels of anxiety, discomfort, understanding, and expectations during diagnostic procedures. Individualized attention, respectful communication, and sensitivity to patients' concerns can contribute to emotional comfort and a positive patient-provider relationship (Soriano et al., 2025).

The overall service quality score was high (3.87 ± 0.25). However, no statistically significant differences were observed according to gender ($p = 0.77$), age ($p = 0.33$), or payment type ($p = 0.17$). The absence of statistically significant differences should not be interpreted as evidence that gender, age, or payment type have no relationship with patient satisfaction. Rather, within

this sample, the study did not detect statistically significant differences in overall service quality scores across these groups. The relatively small sample size (N = 80), the unequal distribution between subgroups, and the concentration of responses toward the highest satisfaction category may have limited the ability to detect between-group differences. The findings suggest that maintaining the existing strengths in reliability, assurance, and empathy while giving particular attention to responsiveness may be useful for continuous quality improvement in radiology services.

CONCLUSION

This study found that patients reported a high level of satisfaction with radiology services across all five SERVQUAL dimensions. The overall service quality score was high (3.87 ± 0.25 on a four-point scale), with reliability and assurance receiving the highest mean scores (3.89 ± 0.26), while responsiveness had the lowest mean score (3.84 ± 0.31). Nevertheless, satisfaction remained favorable across all dimensions, with no respondents reporting being less satisfied or dissatisfied. No statistically significant differences in overall service quality scores were observed according to gender, age, or payment type. These findings indicate that perceived radiology service quality was consistently favorable across the respondent groups examined in this study. Continuous quality improvement should focus on maintaining strengths in reliability and assurance while further improving responsiveness, particularly in terms of timely assistance and communication with patients. Regular assessment of patient perceptions may support the sustainability and improvement of radiology service quality.

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