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The Influence of SERVQUAL Indicators in Measuring Health Service Quality and Patient Satisfaction

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ABSTRACT

Background: Health services are organized efforts by individuals or institutions to prevent and treat diseases, restore health, and improve community well-being. Both government and private healthcare institutions play a crucial role in ensuring accessible and high-quality services. The quality of health services is a key determinant of patient satisfaction. This study aimed to assess the SERVQUAL indicators in measuring the quality of health services and patient satisfaction at Diponegoro National Hospital.
Subjects and Method: A cross-sectional study was conducted at Diponegoro National Hospital, Semarang, in July 2024. A total of 200 patients were recruited using accidental sampling. The dependent variables were service quality and patient satisfaction, while the independent variables included age, education, gender, and financing method. Data were collected using structured questionnaires and analyzed through path analysis.
Results: The concept of service quality was represented by SERVQUAL indicators: reliability (b= 0.61; 95% CI= 0.46–0.76; p<0.001), assurance (b= 0.50; 95% CI= 0.35–0.64; p<0.001), tangibles (b= 0.67; 95% CI= 0.56–0.78; p<0.001), and responsiveness (b= 0.66; 95% CI= 0.46–0.76; p<0.001). Patient satisfaction showed a positive structural relationship with service quality (b= 0.31; 95% CI= 0.07–0.55; p= 0.012). The financing method also affected satisfaction, with insured (BPJS) patients reporting higher satisfaction than general patients (b= 0.15; 95% CI= 0.02–0.27; p= 0.015).
Conclusion: Health service quality is defined by multiple SERVQUAL indicators, including reliability, assurance, tangibles, empathy, and responsiveness. Patient satisfaction is positively associated with service quality and influenced by the financing method, indicating the importance of equitable and high-quality healthcare delivery.

Keywords: quality of health care, health services, patient satisfaction, insurance, path analysis

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BACKGROUND

Health services are movements carried out individually or collectively in institutions and organizations with the aim of preventing and treating diseases, restoring and improving the health of individuals, groups, and communities (Zaini, 2019). The existence of health services from both the government and the private sector is urgently needed by the community to improve their health status. So that

in its implementation, quality and quality services are an important factor in increasing community satisfaction (Baan, 2020). Health services must pay attention to good facilities to patients. Hospital service users, in this case patients not only in terms of curing physical diseases and improving their health status, but also in terms of their satisfaction with their environment, the availability of adequate facilities and infrastructure, and their physical environment can provide comfort (Silalahi et al., 2019).

The quality of health services is an important aspect in the delivery of health services that significantly impacts patient satisfaction and outcomes. Patient-provider interactions and public facility-related domains were found to explain 96.4% variability in net overall satisfaction scores. In addition, providing tailored job training for healthcare workers in healthcare facilities is an important step to improve their knowledge and skills in providing quality services to improve patient satisfaction. The design dimension of the facility can be considered for future study activities (Karimi et al., 2015). The quality of health services can be measured using a quality model using the ServQual (Service Quality) method which is divided into five dimensions of service quality including tangible, reliability, responsiveness, assurance, and empathy (Jonkisz et al., 2021).

Factors that affect patient satisfaction include age, education level, gender, and socioeconomic status (Karsana et al., 2021). Age demographic characteristics can affect patient satisfaction levels. Age affects a person's decision-making. A person's level of rational maturity is important to consider and reflect the situation they are facing (Silalahi et al., 2019).

Gender can affect patient satisfaction because they have different views on hospital services. Female assistants will be more careful and critical of quality aspects when evaluating the performance of service provider staff. While male patients tend to be more (Oroh et al., 2014). The educational factor found that the majority of low satisfaction was experienced by patients with low education. This can be caused by the influence of the patient's communication skills (Chen et al., 2019).

SUBJECTS AND METHOD

1. Study Design

This was a cross-sectional study conducted at the Diponegoro National Hospital Semarang, in July 2024.

2. Population and Sample

The population in this study is patients in the area of the Diponegoro National Hospital Semarang. The researcher used as many as 200 study subjects. The sampling technique is accidental sampling.

3. Research Variables

The dependent variables in this study are service quality and patient satisfaction. The independent variables were age, education, gender, financing method, reliability, tangible, responsiveness, assurance, and empathy.

4. Operational Definition

Age: The age of life from birth according to the identification card to the birthday. Data were taken with a questionnaire with a continuous scale.

Gender: Traits (sexual states) such as male or female. Data were taken with a questionnaire with a continuous scale.

Education: The level of formal education completed by the respondents based on the last diploma they had. Data were taken with a questionnaire with a continous scale.

Financing Method: The method used by patients to finance the services obtained. Data were taken with a questionnaire with a continuous scale.

Reliability: The ability to provide the promised service promptly, accurately, and satisfactorily. Data were taken with a questionnaire with a continous scale.

Tangible: Visual appearance with the availability of facilities both the appearance of employees, equipment, and technology used. Data were taken with a questionnaire with a continuous scale.

Responsiveness: Willingness to help customers and provide fast and appropriate service. Data were taken with a questionnaire with a continuous scale.

Assurance: The ability to provide services that patients can trust. Data were collected by questionnaire with a continuous scale.

Empathy: The attention that an employee gives to an individual customer by trying to understand his or her wishes. Data were collected by questionnaire with a continuous scale.

Patient Satisfaction: The customer's response after comparing the performance or perceived results with his or her expectations. Data were taken with a questionnaire with a continuous scale.

5. Study Instrument

The study instrument used for data collection is using a questionnaire.

6. Data Analysis

Univariate analysis was carried out with the aim of determining the frequency distribution and percentage of each variable studied, namely age, gender, education, financing method, quality of health services and patient satisfaction. The next analysis is bivariate which is carried out on each variable and multivariate analysis using the path analysis model.

7. Research Ethics

Study ethics including informed consent, anonymity, and confidentiality, are handled with care during the study process. The approval letter for the study ethics permit was obtained from the FIK Study Ethics Committee of the University of Muhammadiyah Surakarta on May 14, 2024 with the number 340/KEPK-FIK/V/2024.

RESULTS

1. Sample Characteristics

Table 1 presents the distribution of respondent characteristics based on several variables, including gender, age, education level, and financing method. Of the 200 study participants, 124 (62%) were female and 76 (38%) were male. In terms of age, 107 respondents (53.5%) were younger than 36 years, while 93 respondents (46.5%) were aged 36 years or older. Regarding education level, 21 respondents (10.5%) had completed junior high school, 59 respondents (29.5%) had completed senior high school, and 120 respondents (60%) held a university degree. Based on the financing method, 70 respondents (35%) were categorized as general (self-paying) patients, while 130 respondents (65%) were covered by health insurance (BPJS).

Table 1. Sample characteristics

Variable	Frequency	%
Gender		
Female	124	62
Male	76	38
Age		
<36 years age	107	53.50
≥36 years age	93	46.50
Education Level		
Junior High School	21	10.50
Senior High School	59	29.50
College	120	60

Variable	Frequency	%
Financing Method		
Self-payment	70	35
Health insurance	130	65

2. Univariate Analysis

Table 2 presents the results of the univariate analysis for the 200 study participants. The reliability variable had a mean score of 11.83 (SD= 2.39), with values ranging from 4 to 14. The tangibility variable showed a mean of 11.14 (SD= 2.85), with scores ranging from 2 to 14. For responsiveness, the mean score was 8.10 (SD= 1.54), with a minimum of 3 and a maximum of 10. The assurance variable had a mean of 8.89 (SD= 1.51), with scores ranging from 3 to 10. The empathy variable showed a mean of 10.56 (SD= 1.78), with scores between 5 and 12. Meanwhile, patient satisfaction had a mean of 9.25 (SD= 2.41), with scores ranging from 3 to 12.

Table 2. Univariate analysis of research variables

Variable	N	Mean	SD	Min.	Max.
Reliability	200	8.81	1.34	0	10
Guarantee	200	6.81	1.70	0	10
Physical Evidence	200	7.86	1.31	2	10
Responsiveness	200	8.64	1.24	0	10
Empathy	200	8.47	1.42	0	10
Patient Satisfaction	200	8.79	1.29	0	10

3. Bivariate Analysis

Table 3 presents the analysis of the direct effects of reliability, tangibility, responsiveness, assurance, and empathy on patient satisfaction. The results indicate that all SERVQUAL dimensions have a positive and statistically significant effect on patient satisfaction. Reliability showed a significant positive influence, where each one-unit increase in reliability was associated with a 0.47-unit increase in patient satisfaction (b= 0.47; 95% CI=0.34–0.60; p<0.001). Tangibility also demonstrated a positive relationship, with each one-unit increase resulting in a 0.40-unit rise in satisfaction (b=0.40; 95% CI=0.29–0.50; p<0.001).

Similarly, responsiveness had a significant positive effect, indicating that each one-unit improvement in responsiveness increased satisfaction by 0.65 units (b=0.65; 95% CI=0.45–0.85; p<0.001). Assurance showed a comparable trend, where each one-unit increase led to a 0.55-unit rise in patient satisfaction (b=0.55; 95% CI=0.34–0.76; p<0.001). Finally, empathy was also positively associated with patient satisfaction, with each one-unit increase corresponding to a 0.40-unit improvement (b=0.40; 95% CI=0.22–0.58; p<0.001).

Table 3. Bivariate Analysis

Study Variables	b	95% CI		p
		Lower limit	Upper limit	
Reliability	0.47	0.34	0.60	<0.001
Tangible	0.40	0.29	0.50	<0.001
Responsiveness	0.65	0.45	0.85	<0.001
Assurance	0.55	0.34	0.76	<0.001
Empathy	0.40	0.22	0.58	<0.001

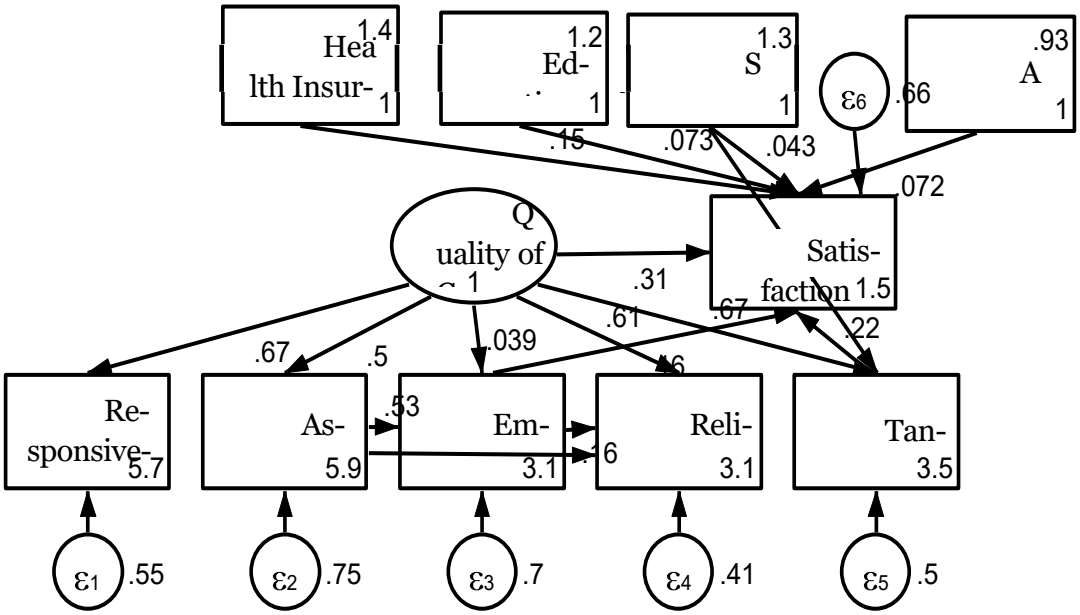

Figure 1 SEM diagram on the measurement of health service quality and its effect on patient satisfaction

4. Multivariate Analysis

Figure 1 presents an SEM diagram of the measurement of health service quality and its effect on patient satisfaction.

Measurement components

Figure 1 shows that in SEM, the quality of health services as a latent variable is measured indirectly through indicators which are the dimensions of quality which include RATER: Reliability, Assurance, Tangible, Empathy, and Responsiveness.

Structural components

Figure 1 shows that structurally patient satisfaction is related to the quality of health services, age, gender, education, and health insurance status.

Table 4. Results of Structural Equation Modeling of quality measurement in health services

Variables Dependent	Variables Independent	Coefficient (b)	95% CI		p
			Lower Limit	Upper Limit	
Component Measurement					
Quality	← Reliability	0.61	0.46	0.76	<0.001
	← Assurance	0.50	0.35	0.64	<0.001
	← Tangible	0.67	0.56	0.78	<0.001
	← Empathy	0.03	-0.14	0.21	0.673
	← Responsiveness	0.66	0.46	0.76	<0.001
Component Structural					
Satisfaction	← Quality	0.31	0.07	0.55	0.012
	← Sex (Woman)	0.04	-0.08	0.16	0.500
	← Age (> 36 years)	0.07	-0.04	0.19	0.244
	← Insurance	0.15	0.02	0.27	0.015
	← Education (Bachelor)	0.07	-0.04	0.19	0.245
	← Empathy	0.16	0.03	0.29	0.013
	← Tangible	0.21	0.01	0.42	0.041

Variables Dependent	Variables Independent	Coefficient (b)	95% CI		p
			Lower Limit	Upper Limit	
Reliability	← Assurance	0.13	-0.02	0.29	0.099
	← Empathy	0.16	0.03	0.29	0.015
Empathy	← Assurance	0.52	0.39	0.65	<0.001
Tangible	← Sex (Woman)	0.21	0.10	0.32	<0.001
N observation	= 200				
Likelihood ratio	= -2904.87				
Prob>chi2	= 0.21				
RMSEA	= 0.03				
CFI	= 0.98				
TLI	= 0.97				
SRMR	= 0.04				

Table 4 presents the results of SEM analysis on the measurement of health service quality and its effect on patient satisfaction.

Measurement Components

Table 4 shows that in SEM, the quality of health services as a latent variable is measured indirectly by a number of indicators which are dimensions of quality, with factor loading and statistical significance (p-value) as follows: Reliability (b= 0.61; CI 95%= 0.46 to 0.76; p<0.001), Assurance (b= 0.50; CI 95%= 0.35 to 0.64; p<0.001), Tangible (b=0.67; CI 95%= 0.56 to 0.78; p<0.001), Empathy (b= 0.03; CI 95%= -0.14 to 0.21; p= 0.673), and Responsiveness (b= 0.66; CI 95%= 0.46 to 0.76; p<0.001).

Structural Components of Service Quality

Table 4 shows that structurally patient satisfaction is related to the quality of health services (b= 0.31; CI 95%= 0.07 to 0.55; p= 0.012), age (b= 0.07; CI 95%= -0.04 to 0.19; p= 0.244), gender (b= 0.04; CI 95%= -0.08 to 0.16; p= 0.500), and education (b= 0.07; CI 95%= -0.04 to 0.19; p= 0.245), but each did not show statistical significance.

Table 4 shows that structurally patient satisfaction is related to BPJS participation status (health insurance status), and the relationship is statistically significant (b= 0.15; CI 95%= 0.02 to 0.27; p=0.015).

DISCUSSION

1. The Relationship between Reliability and Quality Concept

The relationship between reliability and quality of healthcare in hospitals is an issue that has received significant attention in healthcare studies. For example, emphasize that reliability includes important aspects such as the informative nature of the medical explanations provided by the doctor, the attention of the nurse, and the timeliness of the delivery of care (Setianto et al., 2022).

2. The Relationship between Assurance and Quality Concept

The SERVQUAL model is used to assess the quality of services in the healthcare chain. Studies conducted by Al-Omari show that the assurance dimension significantly affects patient perceptions and expectations in healthcare (Al-Omari, 2020). This model underscores the need for healthcare providers to focus on building trust through effective communication and reliable service delivery (Avcil and Özkan, 2020).

3. The Tangible Relationship with the Concept of Quality

This is supported by Pati, who discusses how the physical environment can affect health outcomes, and states that thoughtful design in healthcare settings can result in better patient engagement and satisfaction (Pati et al., 2016).

4. The Relationship between Empathy and the Concept of Quality

The relationship between empathy and quality of healthcare in hospitals is an important area of study that underscores the importance of emotional intelligence in healthcare delivery. A number of studies have proven that empathetic interactions between healthcare providers and patients result in better communication, increased trust which ultimately results in improved service quality (Ratka, 2018).

5. The Relationship between Responsiveness and Quality Concepts

The impact of responsiveness on patient satisfaction is supported by findings from various studies. For example, conducting a systematic review revealing a significant relationship between responsiveness and patient satisfaction in Iranian hospitals, which showed that hospitals with higher responsiveness scores tended to have better patient satisfaction outcomes. (Rezaei et al., 2018).

6. The Relationship between Quality and Satisfaction

A fundamental aspect of this relationship is the recognition that service quality has a direct impact on patient satisfaction. Patawayati emphasized that there was a significant positive relationship between service quality and patient satisfaction, suggesting that the higher the quality of service, the greater patient satisfaction This was corroborated by , who found that effective communication, which is an important aspect of responsiveness, improves overall health care quality and builds patient trust (Avcil and Özkan, 2020).

7. The Effect of Income on Patient Satisfaction

There was a positive and statistically significant influence on gender variables on patient satisfaction. Data shows that patients with higher income (≥ Rp. 1,200,000/ month) rate the quality of service higher than those with low income (<Rp. 1,200,000). Patients with income (<Rp. 1,200,000) rated the quality of service as good and tended to be satisfied with the services provided by the hospital.

Another study that supports the results of the above analysis is a study conducted by Anfal A. (2020), this study was conducted at Sundari General Hospital Medan and found that high-income respondents have greater demands and expectations for the health services needed because high-income respondents are more financially capable. Respondents with low incomes generally have a dependence on cheaper health service facilities so that with their income they can still receive affordable health services in terms of cost.

8. Sex Relationships with Satisfaction

Studies conducted show that male inpatients generally report higher levels of satisfaction with various aspects of hospitalization, including the frequency of nurse visits to wards and physician attitudes during consultations (Chen et al., 2016).

9. The Relationship between Age and Satisfaction

Studies have identified specific dimensions of care prioritized by elderly patients, which may contribute to their overall satisfaction. This suggests that elderly patients may have different criteria in evaluating their healthcare experience, which may explain differences in satisfaction levels between age groups (Chung et al., 2019).

10. Insurance Relationship with Satisfaction

Studies show that the quality of healthcare services provided by hospitals, both in the public and private sectors, is greatly influenced by the existing financing structure. This suggests that better financing methods can improve service quality and, in turn, patient satisfaction. In Bangladesh, community-based health insurance programs have been introduced as a health financing strategy aimed at improving access and quality of

healthcare services (Sarker et al., 2018).

11. The Relationship between Education and Satisfaction

The relationship between age and perception of the reliability of healthcare quality in hospitals is an important study, as it can significantly affect patient satisfaction and healthcare outcomes. Various studies have examined how age affects patients' expectations and perceptions regarding the reliability of healthcare services. The authors note that older patients, due to their accumulated experience and potential health complexity, may prioritize reliability more than younger patients, who may focus on other aspects such as responsiveness or tangible things (Rezaei et al., 2018).

12. The Relationship between Empathy and Satisfaction

Empathy is an important component of service quality in private hospitals, which directly affects patient satisfaction. Their study shows that when healthcare providers exhibit empathetic behavior, patients tend to report higher levels of satisfaction with their care. The authors note that although technical quality and accessibility are important, the emotional support provided by healthcare professionals plays an important role in patients' perception of quality of care (Ganasegeran et al., 2015).

13. The Tangible Relationship with Satisfaction

Patient satisfaction influences clinical outcomes and is critical to the long-term success of healthcare institutions. This reinforces the idea that hospitals should prioritize maintaining a clean, orderly, and aesthetically pleasing environment to improve patient satisfaction (Susianti et al., 2023).

14. The Relationship between Assurance and Reliability

Assurance is critical in medical settings where patients often rely on functional aspects of service delivery, such as the knowledge and behavior of the healthcare provider, to evaluate the reliability of care (Guiry and Vega, 2015).

15. The Relationship between Empathy and Reliability

Empathy is a key attribute in developing a positive perception of health services. The study found that empathy contributed significantly to the perceived value of health services, reinforcing the idea that empathy interactions increase patient confidence in the reliability of care (Yusuf and Awwaliyah, 2018).

16. The Relationship between Assurance and Empathy

Empathy has a positive effect on patient satisfaction, suggesting that these dimensions are interconnected in shaping the patient experience. In short, the relationship between assurance and empathy is characterized by mutual reinforcement in increasing patient satisfaction and trust in health services (Handoko and Handayani, 2023).

17. Sex Relationship with Tangible

Male and female patients may have similar expectations regarding the physical aspects of health services. Conversely, studies show that gender can be a factor influencing patient behavior and satisfaction in dental health services (Librianto et al., 2022).

AUTHOR CONTRIBUTION

All authors have made meaningful and significant contributions to data analysis and the preparation of the final manuscript.

CONFLICT OF INTEREST

There is no conflict of interest in this study.

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The study is founded by the first author.

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