

DETERMINANTS OF INPATIENT SATISFACTION: A SERVQUAL BASED ANALYSIS

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ABSTRACT

OBJECTIVE:

This study aimed to analyze the quality of inpatient services at Labuang Baji Hospital, Makassar, using the SERVQUAL model to identify the gap between patient expectations and perceptions across five service dimensions: tangibles, reliability, responsiveness, assurance, and empathy.

DESIGN:

A cross-sectional analytic study was conducted among 267 inpatients using purposive sampling. Data were collected using a 22-item SERVQUAL questionnaire measuring expectations and perceptions across five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. Service quality gaps were calculated by subtracting perception scores from expectation scores. Multiple linear regression analysis was performed to assess the predictive influence of each dimension on patient satisfaction. Instrument reliability demonstrated strong internal consistency (Cronbach's alpha > 0.70 for all dimensions).

RESULTS:

All five SERVQUAL dimensions showed negative gaps, indicating that perceived service performance did not fully meet patient expectations. Responsiveness and assurance demonstrated the largest mean gaps. Multiple regression analysis revealed that all five dimensions significantly influenced patient satisfaction ($p < 0.05$), with empathy and assurance emerging as the strongest predictors. The model explained 67.7% of the variance in patient satisfaction ($R^2 = 0.677$), indicating substantial explanatory power.

CONCLUSION:

Inpatient service quality at Batara Siang General Hospital remains below patient expectations across all SERVQUAL dimensions. Interpersonal aspects of care particularly empathy, assurance, and responsiveness play a critical role in shaping patient satisfaction. Targeted managerial interventions focusing on communication, timeliness, and patient-centered care are recommended to enhance service performance and overall satisfaction.

KEYWORDS

Patient satisfaction, Service quality, SERVQUAL model, Tangibility, Reliability, Responsiveness, Assurance, Empathy

INTRODUCTION

Patient satisfaction is a central indicator of healthcare quality and reflects how effectively hospital services meet patient expectations [1,2]. In inpatient settings, satisfaction becomes particularly important due to the intensity and continuity of interactions between patients and healthcare providers. These interactions shape not only patients' perceptions of care but also their overall healthcare experience [3,4].

Service quality has been widely recognized as a key determinant of patient satisfaction. The SERVQUAL model provides a comprehensive framework to evaluate this relationship through five dimensions: tangibles, reliability, responsiveness, assurance, and empathy [5,6]. These dimensions capture both the technical and interpersonal aspects of healthcare delivery, allowing a more holistic assessment of service performance [7,8]. However, evidence consistently shows that gaps remain between expected and perceived service quality, especially in responsiveness and empathy, which are closely linked to patient-provider interaction.

Recent developments in healthcare research indicate a shift from a purely technical evaluation of services toward a more patient-centered approach. While earlier studies emphasized efficiency and procedural accuracy, contemporary perspectives highlight the importance of communication, emotional support, and individualized care [9–11]. This shift reflects a broader understanding that patients are not passive recipients of care but active participants whose experiences and perceptions influence satisfaction outcomes.

Patient satisfaction is also associated with important behavioral and clinical consequences, including treatment adherence, service utilization, and patient loyalty [12,13]. Dissatisfaction often arises when there is a mismatch between expected and perceived service quality, particularly in settings with limited resources and high patient demand [14,15]. These conditions are common in public hospitals in developing countries, where structural constraints may affect the consistency and responsiveness of care.

Despite the extensive use of the SERVQUAL model, many studies still focus on general service evaluations without adequately addressing inpatient contexts, where patients depend on continuous and coordinated care [16,17]. Empirical evidence from regional public hospitals remains limited, especially in Indonesia, where variations in service delivery may influence patient satisfaction differently across settings.

Therefore, this study aims to analyze the determinants of inpatient satisfaction using the SERVQUAL model by examining the influence of tangibles, reliability, responsiveness, assurance, and empathy on patient satisfaction in a regional public hospital in Indonesia.

METHODS

This study employed an observational analytic design with a cross-sectional approach to assess patient perceptions of inpatient service quality at a single point in time. The research was conducted in the inpatient wards of Batara Siang General Hospital, Pangkep, Indonesia, from January to June 2023.

This study received ethical clearance from the Health Research Ethics Committee (KEPK) of Makassar Health Polytechnic, Indonesia, with approval number 1070/M/KEPK-PTKMS/VII/2022. This approval was granted prior to data collection. Formal permission to contact and survey participants at Batara Siang General Hospital was granted by the Chair of the Medical and Nursing Committee, on January 5, 2023.

STUDY POPULATION AND SAMPLING

The study population consisted of inpatients hospitalized during the study period. Eligible inpatients were approached directly by the research team during their hospitalization, informed about the study objectives and procedures, and invited to participate voluntarily after providing informed consent. The research team approached eligible inpatients after coordination with ward nurses, explained the study objectives, procedures, and voluntary nature of participation, and obtained written informed consent before administering the questionnaire. A total of 290 eligible inpatients were invited to participate, of whom 267 participants agreed and completed the questionnaire and were included in the final analysis. The age range of 20–50 years was intentionally defined to ensure a relatively homogeneous adult population capable of independently evaluating healthcare service experiences. Patients below 20 years and above 50 years were excluded to reduce potential response bias related to dependency status, caregiver-assisted responses, or geriatric complexity, which may influence perception-based assessments.

Inclusion Criteria, Participants were included if they: Were aged between 20 and 50 years, had been hospitalized for at least three days, were in stable clinical condition at the time of data collection, were able to communicate in Indonesian (with clarification in Bugis or Makassar when necessary), provided informed consent; **Exclusion Criteria,** Participants were excluded if they: Were in critical condition, had cognitive impairment affecting questionnaire comprehension, were discharged before completing three days of hospitalization.

INSTRUMENT AND DATA COLLECTION

Primary data were collected using a SERVQUAL-based questionnaire consisting of 22 items covering five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. Each item was measured using a 5-point Likert scale for both expectation and perception scores. Mentioning the local language such as Indonesian, Bugis, and Makassar is intended to help patients better understand the questionnaire. This multilingual approach enhanced response validity while maintaining standardization of questionnaire content. Supporting information from informal staff discussions and hospital documents was used only during the study preparation phase to contextualize the SERVQUAL dimensions. These sources were not included in statistical analysis.

VALIDITY AND RELIABILITY TESTING

Content validity was established through expert review involving two healthcare management academics and one senior hospital administrator to ensure item relevance and contextual appropriateness.

Internal consistency reliability was assessed using Cronbach's alpha coefficients based on the current dataset ($n = 267$). All SERVQUAL dimensions demonstrated acceptable reliability ($\alpha > 0.70$), indicating strong internal consistency of the instrument.

Construct validity was evaluated using corrected item-total correlations, with all items exceeding the recommended threshold of 0.30.

ANALYSIS DATA

Data analysis was conducted using SPSS version 26.00 software to assess service quality at Pangkep regional hospital. Descriptive analysis, specifically focusing on the dimensions of Tangibility, Reliability, Responsiveness, Assurance, and Empathy, was employed to evaluate overall participants satisfaction. A multiple linear regression model was utilized to examine overall patient satisfaction as the dependent variable, with the dimensions of participants satisfaction serving as the independent variables.

In this study, data analysis was conducted in two key stages. First, a gap analysis was performed to assess the basic differences between participants expectations and their actual perceptions of inpatient services across each item of the SERVQUAL instrument.

RESULT

SOCIODEMOGRAPHIC CHARACTERISTICS OF RESEARCH PARTICIPANTS AT BATARA SIANG HOSPITAL, PANGKEP

The sociodemographic characteristics outlined herein provide a comprehensive overview of the respondent population, highlighting variations that must be considered in understanding their preferences, needs, and satisfaction levels regarding healthcare services at Batara Siang Hospital in Pangkep. (Table 1).

TABLE 1. SOCIODEMOGRAPHIC CHARACTERISTICS AMONG 267 RESEARCH PARTICIPANTS AT BATARA SIANG GENERAL HOSPITAL, PANGKEP

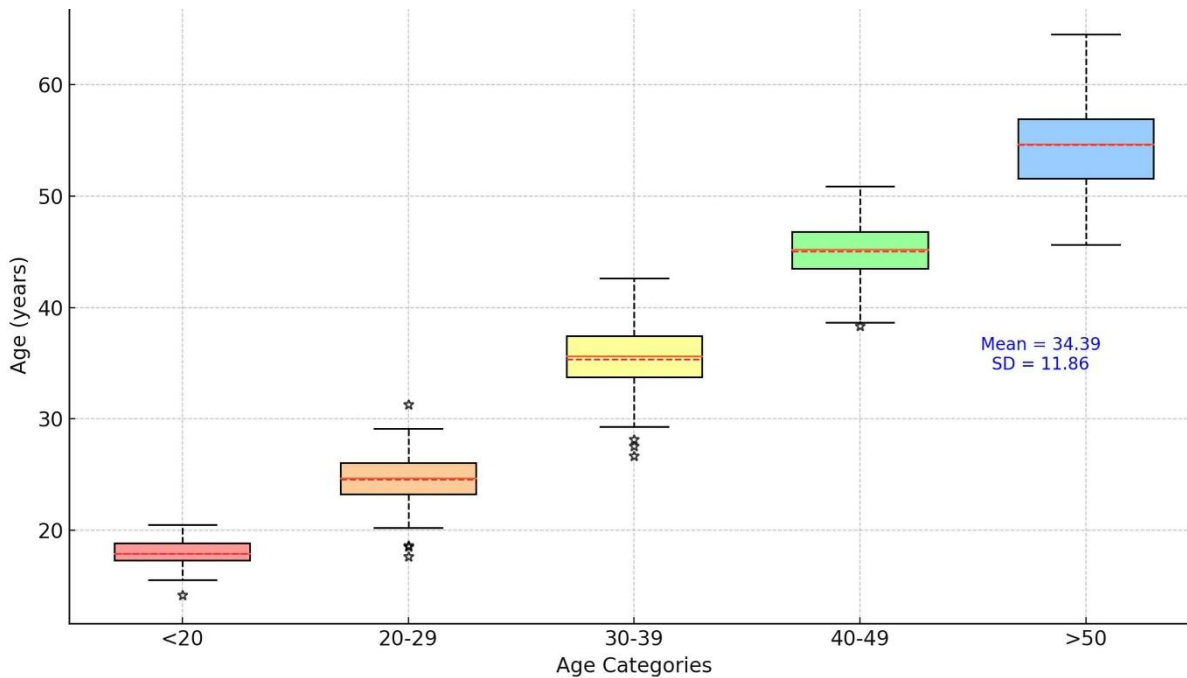
Characteristics	Total, n (%)	p value
Age, mean \pm SD (years)	34.39 \pm 11.86	.000
20 – 29	105 (39,3)	
30 – 39	76 (28,5)	
40 – 50	86 (32,2)	
Sex		
Male	119 (44.6)	.000
Female	148 (55.4)	
Education level		
Basic Educational	116 (43.4)	.000
Moderate Educational	107 (40.1)	
High Educational	44 (16.5)	
Employment		
Work	137 (51.3)	.000
Don't work	130 (48.7)	

The age distribution of respondents was reorganized into three categories to improve analytical clarity. The largest proportion of respondents was aged 20–29 years (39.3%), followed by 40–50 years (32.2%) and 30–39 years (28.5%). The mean age was 34.39 years (SD \pm 11.86), indicating a predominantly productive-age inpatient population. There are more female respondents (55.4%) than male (44.6%), with a p-value of .000 indicating a significant difference in gender distribution. This suggests that female patients are more frequently involved in this survey, though further analysis is needed to determine the cause of this imbalance.

Respondents were categorized into three educational level groups, with the majority having completed primary education (43.4%) and secondary education (40.1%). Those with higher education constituted a smaller proportion (16.5%), and the p-value of .000 indicates that the difference in education levels is statistically significant. These findings may reflect variations in patients' educational attainment at this facility, potentially related to access to services or the social determinants of healthcare influenced by educational background. More than half of the respondents (51.3%) were employed, while 48.7% were unemployed, with a p-value of .000 also indicating a significant difference.

The median age is positioned at the center of the distribution, indicating a balanced central tendency among participants. The interquartile range (IQR) shows a wide span, reflecting moderate variability in participants' ages. Additionally, there are no extreme outliers, which suggests that the age distribution is relatively compact with minimal significant deviations. The data indicates a diverse age range, with the most frequent participants aged between 20 and 39 years. These two age groups collectively represent over 50% of the sample. (Figure 1).

FIGURE 1. THE BOX-AND-WHISKER DIAGRAM ILLUSTRATES THE AGE DISTRIBUTION ACROSS FIVE AGE CATEGORIES.



The boxes represent the interquartile range, the whiskers show data variability, and outliers are marked with red stars.

Females make up 55.4% of the participants, while males account for 44.6%. This means that the female category alone constitutes 55% of the population, and when males are added, the total reaches 100%. This near-balanced gender distribution provides a fairly equal representation of sexes in the sample, with a slight female predominance (Figure 2a). Basic Education: 43.4% of participants. Moderate Education: 40.1% of participants. High Education: 16.5% of participants. Cumulative: About 83.5% of participants have basic or moderate education, indicating that most of the sample comes from lower educational backgrounds. The data reflects limited educational advancement, which could impact health literacy or access to healthcare resources (Figure 2b). Employed: 51.3% of participants. Unemployed: 48.7% of participants. Cumulative: Including both categories brings the cumulative count to 100%. The distribution of employed and unemployed participants is nearly equal. This highlights the socioeconomic diversity of the sample and potential implications for healthcare affordability or access (Figure 2c).

FIGURE 2. GENDER AND SOCIOECONOMIC INFLUENCES ON HEALTH LITERACY.

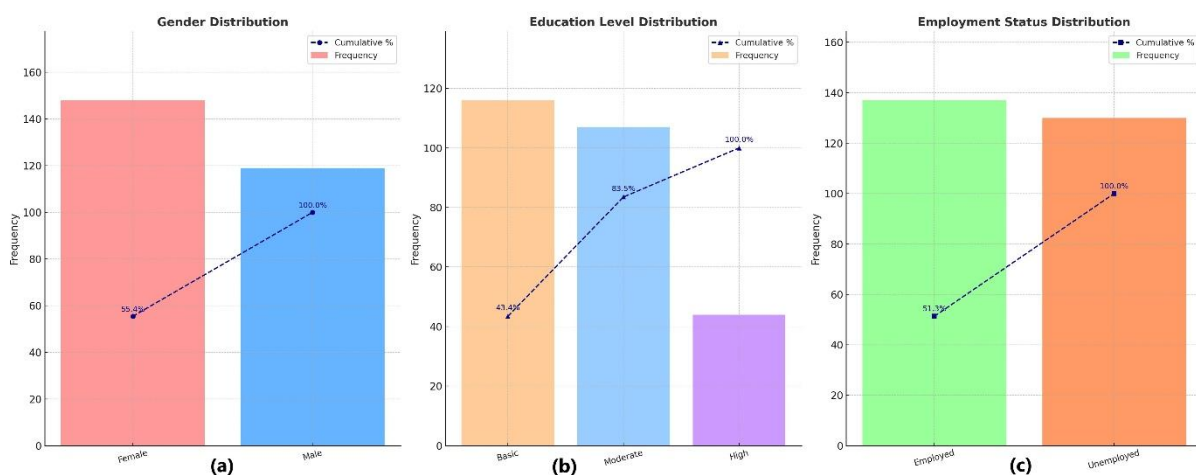


Figure 2. Gender and Socioeconomic Influences on Health Literacy. (2a) This near-balanced gender distribution provides a fairly equal representation of sexes in the sample, with a slight female predominance. (2b) The data reflects limited educational advancement, which could impact health literacy or access to healthcare resources. (2c) The distribution of employed and unemployed participants is nearly equal. This highlights the socioeconomic diversity of the sample and potential implications for healthcare affordability or access.

RELIABILITY AND VALIDITY TESTING

Prior to hypothesis testing, instrument reliability and construct validity were assessed. Content validity was established through expert review involving two healthcare management academics and one senior hospital administrator to ensure item relevance and contextual appropriateness.

Internal consistency reliability was evaluated using Cronbach's alpha coefficients for each SERVQUAL dimension based on the current dataset (n = 267). The results demonstrated acceptable to high reliability: 1) Reliability: $\alpha = 0.88$; 2) Tangibles: $\alpha = 0.85$; 3) Responsiveness: $\alpha = 0.90$; 4) Assurance: $\alpha = 0.91$; 5) Empathy: $\alpha = 0.89$; 6) Overall scale: $\alpha = 0.93$. All coefficients exceeded the recommended threshold of 0.70, indicating strong internal consistency among items within each dimension. Construct validity was assessed through corrected item-total correlation, with all items exceeding 0.30, confirming adequate internal structure of the instrument.

SERVQUAL APPROACH MODEL

Table 2 contains detailed item-level data for all 22 SERVQUAL items, categorized under the five service quality dimensions: Reliability, Tangibility, Responsiveness, Assurance, and Empathy.

Each item is labeled numerically (Items 1–22), with corresponding mean scores for both expectations (Y) and perceptions (X), allowing for calculation of the service quality gap ($Y - X$) at the item level. The items with the largest negative gaps, indicating the greatest participants dissatisfaction, are clearly identifiable in the table. For instance, Item 10 under the Responsiveness dimension showed a perception score of 2.72 versus an expectation score of 4.46, resulting in a gap of -1.74 . Similarly, Item 12 under Assurance and Item 16 under Empathy both showed perception scores of 2.70, with corresponding expectation scores of 4.43 and 3.97, respectively, indicating key areas of participants dissatisfaction. These item-specific insights are essential for generating targeted recommendations and ensuring actionable improvements in hospital service delivery. The discussion section of the manuscript has also been revised to reflect this more granular interpretation, directly linking item-level dissatisfaction to priority areas for service enhancement.

TABLE 2. MEASUREMENTS OR OBSERVATIONS RELATED TO PARTICIPANTS SATISFACTION IN HEALTH CARE SETTINGS

dim	Item	Answer of belief							Answer of belief							Gap
		STS	TS	N	S	SS	Σ	X	STS	TS	N	S	SS	Σ	Y	
Reliability	1	0	102	87	68	10	787	2,95	0	0	5	145	117	1180	4,42	-1,23
	2	1	111	61	76	18	800	3,00	0	0	4	134	129	1193	4,47	
	3	0	2	97	155	13	980	3,67	0	0	6	149	112	1174	4,40	
	4	0	86	78	86	17	835	3,13	0	0	9	600	570	1179	4,42	
	total average : 856 or grand mean 3, 20								total average : 1.182 or grand mean 4,43							
Tangibility	4	1	13	152	82	19	906	3,39	0	0	6	147	114	1176	4,40	-1,04
	5	0	25	139	86	17	896	3,36	0	0	5	142	120	1183	4,43	
	6	0	27	110	114	16	920	3,45	0	0	4	140	123	1187	4,45	
	7	0	31	107	114	15	914	3,42	0	0	5	134	128	1191	4,46	
	total average : 909 or grand mean 3,40								total average : 1.184 or grand mean 4,44							
Responsibility	8	1	119	100	28	19	746	2,79	0	0	6	132	129	1191	4,46	-1,55
	9	1	26	124	102	14	903	3,38	0	0	5	131	131	1194	4,47	
	10	1	121	110	23	12	725	2,72	0	0	4	137	126	1190	4,46	
	11	0	127	98	23	19	735	2,75	0	0	5	136	126	1189	4,45	
	total average : 777 or grand mean 2,91								total average : 1.191 or grand mean 4,46							
Assurance	12	1	119	115	22	10	722	2,70	0		7	138	122	1183	4,43	
	13	2	109	122	21	13	735	2,75	0	0	6	142	119	1181	4,42	
	14	1	129	102	20	15	720	2,70	0	0	8	134	125	1185	4,44	
	15	0	102	126	27	12	750	2,81	0	0	4	136	127	1191	4,46	

	total average : 732 or grand mean 2,74								total average : 1.185 or grand mean 4,44						-1,7	
Empathy	16	1	127	102	25	12	721	2,70	0	0	5	132	130	1061	3,97	
	17	2	128	100	22	15	721	2,70	0	0	4	137	126	1190	4,46	
	18	1	123	102	26	15	732	2,74	0	0	3	133	131	1196	4,48	
	19	0	94	132	27	14	762	2,85	0	0	9	129	129	1188	4,45	
	total average : 734 or grand mean 2,75								total average : 1.159 or grand mean 4,34						-1,59	
	total average : 802 or grand mean 3,00								total average : 1.159 or grand mean 4,34						-1,42	

1. Reliability model (Corrected)

The Reliability dimension showed a positive and statistically significant association with participants satisfaction ($\beta = 0.315$, $t = 3.323$, $p = 0.01$). This indicates that for every one-unit increase in the reliability score, participants satisfaction increases by 0.315 units, holding other variables constant.

2. Tangible Model (Corrected)

Tangibles demonstrated a significant positive relationship with satisfaction ($\beta = 0.305$, $t = 2.827$, $p = 0.04$), suggesting that improved physical facilities and appearance are associated with higher satisfaction levels.

3. Responsiveness Model (Corrected)

Responsiveness had a significant positive effect on participants satisfaction ($\beta = 0.479$, $t = 3.866$, $p < 0.001$), indicating that timely and prompt service delivery is a strong predictor of satisfaction.

4. Assurance Model (Corrected)

Assurance exhibited a significant positive association with participants satisfaction ($\beta = 0.502$, $t = 5.247$, $p < 0.001$), suggesting that participants trust in staff competence and safety significantly enhances satisfaction.

5. Empathy Model (Corrected)

Empathy emerged as the strongest predictor of participants satisfaction ($\beta = 0.629$, $t = 6.787$, $p < 0.001$), indicating that personalized attention and emotional support are the most influential determinants of satisfaction in this study.

6. Simultaneous Regression Model

The simultaneous effect of the five SERVQUAL dimensions—Reliability (X1), Tangibles (X2), Responsiveness (X3), Assurance (X4), and Empathy (X5)—on participants satisfaction was assessed using multiple linear regression analysis.

The model demonstrated strong explanatory power, with an R^2 value of 0.677, indicating that 67.7% of the variance in participants satisfaction is explained collectively by the five service quality dimensions. The remaining 32.3% of the variance may be attributed to other factors not included in this model, such as individual participants characteristics, hospital system factors, or contextual influences.

The overall regression model was statistically significant, as indicated by the F-test ($p < 0.001$). This confirms that the five SERVQUAL dimensions jointly provide a meaningful contribution to predicting participants satisfaction.

DISCUSSION

This study aimed to evaluate the quality of inpatient services at Batara Siang General Hospital, Pangkep, Indonesia using the SERVQUAL model, focusing on identifying the gaps between participants expectations and perceptions across the five dimensions of service quality: tangibles, reliability, responsiveness, assurance, and empathy.

THE SERVQUAL MODEL AND ITS APPLICATION IN HEALTHCARE

The findings demonstrated that all five dimensions exhibited negative service quality gaps, indicating that participants expectations were consistently higher than their perceived experiences of care.

The SERVQUAL model is widely used to measure healthcare service quality and participants satisfaction [18,19]. Originally comprising five dimensions (reliability, assurance, tangibles, responsiveness, and empathy), studies have found variations in its applicability across different contexts. Lam (1997) reported that SERVQUAL is reliable for measuring healthcare quality

in Hong Kong, although the five-dimension structure was not confirmed. Similarly, Kansra and Jha (2016) identified only four factors in their Indian hospital study. Pekkaya et al. (2019) found that tangibles scored highest among the dimensions in a Turkish hospital, with reliability being the most determinant for outpatient satisfaction. Demographic factors such as age, income, and service type were found to influence perceived service quality [18]. Despite some criticisms, SERVQUAL remains a valuable tool for healthcare providers to assess and improve service quality [20]. The SERVQUAL model is a widely recognized framework for assessing service quality in various sectors, including healthcare. Its application in healthcare settings aims to bridge the gap between participants expectations and actual service delivery, ultimately enhancing participants satisfaction and care quality. The model evaluates five key dimensions: reliability, assurance, tangibles, empathy, and responsiveness. While the SERVQUAL model provides a structured approach to evaluating service quality, its implementation can be challenging due to cultural diversity and the complexity of participants-provider interactions. Nonetheless, it remains a valuable tool for healthcare organizations aiming to enhance service quality and participants satisfaction.

SERVQUAL has gained popularity in healthcare settings due to its ability to effectively measure and assess service quality from the participants perspective. The instrument allows healthcare providers to identify gaps between participants expectations and perceptions of service quality, enabling targeted improvements in care delivery[21]. The versatility of SERVQUAL is evident in its application across various healthcare contexts, including colposcopy clinics [22], physiotherapy and rehabilitation hospitals [23], and outpatient services [18]. Its adaptability to different healthcare settings makes it a valuable tool for managers and researchers seeking to evaluate and enhance service quality [18,24]. The SERVQUAL has proven to be a consistent and reliable scale for measuring healthcare service quality, some studies have found that the proposed five dimensions of SERVQUAL are not always confirmed in healthcare settings [25]. This suggests that the instrument may require adaptation to fully capture the unique aspects of healthcare service quality. Nevertheless, SERVQUAL remains a widely used and trusted method for assessing participants satisfaction and identifying areas for improvement in healthcare services. Despite its strengths, some studies indicate mixed results regarding SERVQUAL's effectiveness in various healthcare contexts, suggesting that while it is a valuable tool, its application may require careful consideration of specific settings and participants demographics.

The SERVQUAL model, widely used for measuring service quality, has been criticized for several limitations. These include its inability to fully capture customer experience [26], overlap between process and outcome measures, and scaling issues [27]. The model's dimensions are considered too limited to comprehensively assess service quality [28]. Cognitive differences among customers, stemming from personality disorders or cultural variations, can lead to irrational perceptions, further weakening SERVQUAL's reliability [29]. Additionally, the model's applicability across diverse service settings, countries, and ethnicities has been questioned [28]. While modified versions have been developed to address these shortcomings, they too have fallen short in reflecting the true dimensions of service quality impacting customer satisfaction.

The SERVQUAL model, while widely utilized for measuring service quality, has several notable limitations that hinder its effectiveness in capturing the complexities of customer experience. These limitations stem from its narrow focus and methodological constraints, which can lead to an incomplete understanding of service quality in various contexts. Despite these limitations, SERVQUAL remains a foundational tool in service quality measurement. However, the evolving landscape of customer experience necessitates the development of more comprehensive models that can address these shortcomings and better reflect the nuances of service quality. Researchers suggest the need for developing more comprehensive and universally accepted scales to measure service quality and customer experience.

THE DIMENSIONS OF SERVICE QUALITY IN SERVQUAL.

Reliability Model

Reliability in the implementation of the inpatient service quality dimension at the hospital with a p_value of 0.01, which is less than 0.05, in other words, significant. It can be said that respondents' feedback regarding reliability, such as: straightforward inpatient service procedures, quick and accurate examination, treatment, and care services, orderly and systematic administrative activities, as well as medical staff and employees, on average, participants expressed that they

were still lacking or unsatisfactory. The reason is that incoming participants experience service procedures that take too long, especially in terms of examination and treatment services. However, even though satisfaction is consumer-oriented, it does not mean that in determining the quality of service, the service provider must follow the desires of all consumers. In determining the quality of service, the Pangkep District Hospital must consider not only meeting customer expectations but also the availability of the resources they possess.

The reliability analysis of the inpatient service quality dimension in hospitals consistently shows high internal consistency across various studies. Several papers report strong Cronbach's alpha values for the service quality dimensions. Chu et al. (2018) noted a Cronbach's alpha value ranging from 0.794 to 0.958 for the SERVQUAL dimensions and technical quality [30]. Similarly, Younquoi et al. (2023) conducted a reliability analysis using Cronbach's alpha on the SERVQUAL dimensions [31]. Budiharto (2020) also used reliability analysis in the path analysis of their service quality dimensions [32]. While most studies use the standard SERVQUAL dimensions, some researchers have proposed modifications. Chu et al. (2018) combined the original SERVQUAL instrument with additional technical quality measures [30]. Budiharto (2020) used a modified SERVQUAL scale that includes dimensions such as trust and communication [32]. This indicates that although the core SERVQUAL framework is widely accepted, researchers see value in adapting it to specific healthcare contexts. The reliability analysis of the inpatient service quality dimensions consistently yields high internal consistency across studies. The SERVQUAL framework provides a reliable foundation, although some researchers propose context-specific modifications. This reliability supports the validity of using these dimensions to assess and improve the quality of inpatient services in hospitals.

The evaluation of reliability in inpatient service quality at hospitals has been extensively studied using various approaches and instruments. Several studies have developed and validated questionnaires to measure participants satisfaction and assess service quality in inpatient settings [33,34]. These instruments typically include several dimensions such as physician care, nursing care, hospital environment, and communication [34,35]. Various methodologies have been used to evaluate reliability. While some studies focus on traditional psychometric properties such as internal consistency and test-retest reliability [36], others have explored new approaches. For example, one study used data envelopment analysis to evaluate service reliability by comparing performance over time and identifying factors that affect unreliable phases [37]. Another study compared frequentist models, empirical Bayes, and Bayesian hierarchy to estimate the reliability of healthcare service quality measures [37]. The reliability of inpatient service quality measures is crucial for accurate assessment and improvement of care in hospitals. Although various instruments and methods have been developed, it is important to note that high reliability estimates may not always ensure accurate differentiation among service providers [37]. Future research should focus on refining existing tools and exploring innovative approaches to enhance the reliability and validity of inpatient service quality evaluations across various healthcare settings.

Tangible Model

The physical evidence in this study is the comfort in the inpatient room, the medical staff and employees appearing neat and polite, as well as having adequate physical facilities. On average, respondents provided fairly satisfactory answers with a p -value test result of 0.04, which is less than 0.05, in other words, significant.

Physical evidence plays an important role in assessing the dimensions of inpatient service quality in hospitals. Several studies have highlighted the importance of physical evidence: The SERVPERF model, which measures customer perceptions of service quality, includes "tangible" as one of its five main dimensions [38]. This dimension includes the physical aspects of the hospital environment that can be observed and evaluated by participants. Similarly, the SERVQUAL instrument, used in several studies, also includes tangible as an important component of service quality assessment [24,39]. Some studies have found that physical evidence may have varying impacts on different participants groups. For example, Trivedi and Jagani (2018) reported that the physical environment was significantly associated with satisfaction only among female inpatients [40]. This indicates that the importance of physical evidence may vary based on demographic factors. In conclusion, although physical evidence is consistently recognized as an important dimension of inpatient service quality, its relative importance may vary. The HospitalQual model, for example, includes "hospital infrastructure" as one of its seven dimensions for measuring inpatient service quality [41]. However, it should be noted that

in some studies, such as Budiharto (2020), the quality of infrastructure does not have a significant impact on participants loyalty, indicating that other factors may sometimes take precedence in overall participants satisfaction and loyalty [32].

Responsiveness Model

The dimension of responsiveness (quick response) is the customer's perception of the level of service felt, received by the customer regarding the customer service's ability to resolve issues, meet desires, and be responsive and agile in addressing the problems faced by the customer [42].

Quick responsiveness in service, especially for inpatients, is related to the ability of the staff to meet participants needs, provide prompt and accurate responses to participants complaints, and convey clear and easily understandable information to patients. From the data analysis on responsiveness, it was found that the p_value was 0.00, which is less than 0.05, meaning it is significant or has an impact on the satisfaction of inpatients at Batara Siang Hospital Pangkep. Guarantee is related to feelings of safety, skillfulness, friendliness, honesty, and the ability to provide services to inpatients in the hospital [43]. Quality assurance in healthcare is very important to foster trust and ensure that participants receive the highest standard of care while being treated in the hospital. An effective quality assurance program involves the continuous monitoring, evaluation, and improvement of healthcare services to meet established standards and participants expectations [44].

The research results indicate that assurance is generally in the insufficient category, which illustrates the absence of guarantees in case of errors in the performance of the staff, and the cost rates do not match the quality of the received service. Meanwhile, the knowledge and skills of the staff in carrying out their duties are quite good, as evidenced by the medical personnel and employees having the ability, extensive knowledge, and competence in performing their tasks. Therefore, with a p_value of 0.00, which is less than 0.05, it is significant.

The dimension of responsiveness is indeed a crucial aspect of service quality, reflecting customers' perceptions of how quickly and effectively service providers respond to their needs and concerns. Several studies have examined this dimension in various contexts, revealing its significance in shaping overall customer satisfaction and loyalty. Research findings indicate that responsiveness plays a crucial role in the quality of customer service across various industries. In the context of e-commerce, a study on Tokopedia, one of the major e-commerce platforms in Indonesia, found that responsiveness has a sentiment balanced between positive and negative, indicating room for improvement [45]. Similarly, in the telecommunications sector, a study on Nepal Telecom Company (NTC) revealed that responsiveness, along with other dimensions of service quality, has a significant positive impact on customer satisfaction and loyalty [46]. The importance of responsiveness is not only limited to external customer service but also extends to internal service quality. A study on customer-facing employees in full-service hotels shows that the responsiveness dimension of internal service quality significantly affects employee commitment to customer service beyond their roles [47]. These findings highlight the interconnection between internal and external service quality, emphasizing the need for organizations to cultivate a responsive culture at all levels. In conclusion, the dimension of responsiveness is an important factor in determining customers' perceptions of service quality. Organizations in various sectors should prioritize improving their responsiveness to customer needs and issues to enhance overall service quality, customer satisfaction, and loyalty. Further research could explore specific aspects of responsiveness that have the most significant impact on customer perception and how this may vary across different industries and cultural contexts.

Assurance Model

Assurance relates to security, skill, friendliness, honesty, and the ability to provide services to hospital inpatients. The study found that assurance is generally lacking, indicating no guarantee in case of errors in officer performance and a mismatch between cost and service quality. However, medical personnel and employees demonstrate good knowledge and skills in their duties.

Assurance is a critical dimension of healthcare service quality that significantly impacts participants satisfaction in hospital settings. Numerous studies have underscored its importance and influence on the overall participants experience. This

dimension encompasses a sense of security, skill, friendliness, honesty, and the ability to provide effective services to inpatients. According to Negari et al. (2021), assurance has the most substantial influence on inpatient satisfaction. Participants feel assured and satisfied when healthcare workers effectively communicate their expertise and competencies before performing their duties [48]. This finding is supported by Setianto et al. (2022), which report that participants are satisfied with friendly and polite healthcare services, safe healthcare services, and overall quality care all of which fall under the assurance dimension [49].

While most studies identify assurance as a significant factor, some contradictions exist. Perera and Dabney (2020) revealed that gaps in assurance significantly impact overall quality and satisfaction. This suggests that when participants' expectations of assurance are not met, it can negatively affect their perception of service quality and satisfaction [50]. Additionally, Al-Neyadi et al. (2016) rated the assurance dimension as the highest among the five SERVQUAL dimensions in both public and private hospitals in the UAE [51].

The assurance dimension plays a crucial role in shaping participants' satisfaction and perceived quality of healthcare services. It encompasses various aspects, such as the competence and communication skills of healthcare providers, the safety of services, and the overall trustworthiness of the hospital environment. Healthcare institutions should prioritize enhancing this dimension to improve participants' satisfaction and overall service quality [52,53].

Empathy Model

Based on the survey results, data analysis shows that the empathy factor has a significant influence on participants' satisfaction. The t-value of 6.787, which is greater than the t-table (1.96) with 266 degrees of freedom at a significance level of 0.05, indicates statistical significance. This means that the hypothesis stating a significant influence between empathy and participants' satisfaction can be accepted. In addition, the significance is also supported by the probability analysis (p-value) which shows a p-value of 0.00, which is smaller than the established significance level of 0.05. Thus, these results reinforce the conclusion that empathy is an important factor significantly affecting participants' satisfaction.

Empathy plays an important role in shaping customers' perceptions of the quality of healthcare services, particularly in the context of participants' experience. Several studies have identified empathy as one of the main dimensions in the framework for measuring service quality in healthcare settings [38,54,55]. The SERVQUAL and SERVPERF models, which are widely used to assess service quality in healthcare, consistently include empathy as a core dimension alongside reliability, responsiveness, assurance, and tangibles [38,54]. Empathy in healthcare refers to the ability of service providers to understand participants' needs and offer personalized attention. This includes aspects such as individual care, understanding specific participants' requirements, and showing genuine concern for the participants' well-being [55,56]. Although empathy is consistently recognized as important, its relative [38]. This shows that although empathy is very important, its significance may depend on the context and be influenced by other aspects of the healthcare experience. Empathy remains an important component in participants' perception of the quality of healthcare services. Empathy represents the human touch in medical care, fostering understanding and closeness between service providers and participants. Healthcare organizations must prioritize empathy alongside other dimensions of service quality to enhance participants' satisfaction and loyalty [57]. However, a holistic approach that addresses various dimensions of quality is necessary for an optimal participants' experience in healthcare settings [57].

The key findings of this study indicate that the reliability dimension is the most significant factor influencing participants' satisfaction at Batara Siang Pangkep Hospital. Many participants perceive that inpatient service procedures, particularly regarding examination and treatment services, are excessively prolonged. Reliability analysis demonstrates high internal consistency across the studies, although certain studies recommend specific modifications to the SERVQUAL framework. The application of SERVQUAL dimensions is valid for assessing and enhancing the quality of inpatient services in hospitals.

COMPARATIVE ANALYSIS OF STUDY RESULTS AT BATARA SIANG GENERAL HOSPITAL, PANGKEP, AND VARIOUS HOSPITALS IN INDONESIA.

To strengthen the discussion, a comparative analysis was conducted to position our findings within the context of similar studies across Indonesia. In our study at the hospital the largest negative gaps between participants expectations and perceptions were observed in the dimensions of Responsiveness (-1.47), Assurance (-1.44), and Empathy (-1.36). This pattern is consistent with findings from Novita et al. [58], who conducted a SERVQUAL-based study at RSUD Pirngadi Medan, Indonesia and identified significant gaps in Responsiveness and Empathy, attributing them to delays in staff responses and lack of effective communication during inpatient care.

Similarly, Notobroto [59], in their assessment of service quality at RSUD Dr. Soetomo Surabaya, Indonesia also found that Responsiveness had the widest gap, particularly due to long waiting times and slow nursing responses to participants needs. This aligns closely with our study, where Item 10, related to the promptness of service, showed the largest individual gap (-1.74).

In contrast, a study by Noviyani et al. [60] conducted in a Type A hospital in Palembang, Indonesia found that Tangibility had the highest gap, reflecting dissatisfaction with physical facilities and infrastructure, which differs from our findings where Tangibility showed the smallest negative gap (-0.91). This variation underscores how the dimension of dissatisfaction may differ depending on hospital type, geographic location, and service capacity.

Collectively, these studies reinforce the broader trend of service quality gaps in Indonesian hospitals, particularly in interpersonal and response-related aspects of care. However, the variation in dimension severity highlights the importance of localized interventions and targeted staff training tailored to the institutional context.

EXPANDED IMPLICATIONS FOR MANAGERS AND LEADERS AT BATARA SIANG HOSPITAL

The findings of this study emphasize the importance of targeted managerial interventions within the five SERVQUAL dimensions tangibles, reliability, responsiveness, assurance, and empathy to enhance participants satisfaction in inpatient care at Batara Siang Hospital.

1. Reliability as the Primary Driver of Satisfaction

Since reliability emerged as the dimension with the highest performance and strongest influence on satisfaction, hospital managers should institutionalize practices that ensure consistent, error-free service delivery. This includes standardizing care procedures, enhancing staff competence through routine training, and reinforcing accountability systems to reduce variability in care outcomes.

2. Responsiveness and Assurance: Enhancing Staff- participants Interaction

The relatively lower scores in responsiveness and assurance point to a need for strengthening communication skills and attentiveness among hospital staff. Managers should implement structured training programs in effective communication, active listening, and timely service delivery to increase participants confidence and satisfaction. In addition, empowering staff to make quick decisions within their scope of practice can enhance perceived responsiveness.

3. Tangibles: Improving the Physical Environment

Although tangibles scored moderately, the physical environment remains an essential component of perceived service quality. Leaders should prioritize regular maintenance, modern medical equipment upgrades, and a clean, welcoming inpatient setting to align participants perceptions with quality expectations.

4. Empathy: Personalizing Patient Care

The relatively lower empathy dimension suggests that participants may feel a lack of individualized attention. Hospital leadership should consider implementing participants-centered care models that emphasize emotional support and personalized communication. Encouraging staff to recognize and respond to participants unique needs can foster a more compassionate environment.

5. Data-Driven Quality Improvement

This study's SERVQUAL assessment can serve as a baseline for continuous quality improvement. Managers are encouraged to adopt regular participants satisfaction surveys using the SERVQUAL framework to monitor trends, identify new gaps, and adapt service delivery accordingly.

By focusing on these targeted strategies—particularly reinforcing reliability, enhancing staff responsiveness and assurance, and fostering empathetic care—managers at Batara Siang Hospital can more effectively elevate inpatient satisfaction and strengthen overall service quality.

STRENGTHS AND WEAKNESSES

The study employs the SERVQUAL model, a well-established framework for assessing service quality, which allows for a structured analysis of participants satisfaction across multiple dimensions. The research provides statistically significant results, such as the p-values indicating strong correlations between service dimensions and participants satisfaction, which enhances the credibility of the findings. A varied demographic of respondents, which helps in understanding different participants perspectives and needs, thereby enriching the analysis of service quality. The implications of the findings for hospital management, suggesting areas for improvement that can directly enhance participants satisfaction and service quality. The combination of descriptive analysis and multiple linear regression provides a robust approach to understanding the relationships between different service quality dimensions and participants satisfaction.

While the SERVQUAL model is widely used, it may not fully capture the nuances of participants satisfaction in different cultural contexts, which could limit the generalizability of the findings. The study uses purposive sampling, which may introduce bias as it does not randomly select participants. This could affect the representativeness of the sample and the overall findings. The research is limited to inpatient services, which may overlook important aspects of participants satisfaction related to outpatient services or other healthcare settings. The study primarily relies on quantitative measures, which may not capture the full depth of participants' experiences and perceptions. Qualitative insights could provide a more nuanced understanding of participants' satisfaction. The cross-sectional design captures participants' satisfaction at a single point in time, which may not reflect changes in perceptions over time or the impact of specific interventions .

MEANING OF THE STUDY

The meaning of this study is to provide valuable information and insights into the dimensions of participants satisfaction in inpatient services at Batara Siang Hospital Pangkep. The study utilizes the SERVQUAL model as the analytical framework to measure reliability, tangibility, responsiveness, assurance, and empathy dimensions of service quality. This study can be useful for healthcare providers and policymakers to understand the key factors that influence participants' satisfaction and improve the quality of inpatient services at the hospital.

UNANSWERED QUESTIONS AND FUTURE RESEARCH

Based on the study's findings and limitations, some potential avenues for future research could investigate specific aspects of responsiveness and assurance dimensions that have the most significant impact on participants perceptions and how this may vary across different cultures and countries. Additionally, future research could explore the impact of participants satisfaction on participants loyalty, hospital reputation, and financial performance.

CONCLUSION

This study concludes that the quality of inpatient services at Haji Hospital Makassar, assessed using the SERVQUAL model, reveals a consistent gap between participants expectations and their perceptions across all five dimensions tangibles, reliability, responsiveness, assurance, and empathy indicating that service delivery has not fully met participants expectations. The largest gap was observed in the empathy dimension, underscoring a critical need to enhance participants-centered care and personalized interactions. These findings highlight the importance of targeted improvements in human resource management, communication, and responsiveness to participants needs to elevate the overall quality of inpatient services and participants satisfaction in hospital settings.

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