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THE INFLUENCE OF SERVICE QUALITY DIMENSIONS ON PATIENT LOYALTY WITH SATISFACTION AS A MEDIATING VARIABLE AT PKU MUHAMMADIYAH WONOGIRI HOSPITAL

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Abstract

This study aims to analyze the influence of service quality dimensions, including tangible, reliability, responsiveness, assurance, and empathy, on patient loyalty, with patient satisfaction as a mediating variable at PKU Muhammadiyah Wonogiri Hospital. This study employed a quantitative, survey-based approach. The sample consisted of 200 outpatients selected using purposive sampling. Data were collected using a Likert-scale questionnaire and analyzed using Partial Least Squares–Structural Equation Modeling (PLS-SEM) with SmartPLS. The results showed that reliability, assurance, and empathy had a positive and significant effect on patient satisfaction, while tangibles and responsiveness did not significantly influence satisfaction. Patient satisfaction had a positive and significant effect on patient loyalty. Furthermore, tangibles, assurance, and empathy had a direct significant effect on patient loyalty, while reliability and responsiveness did not show significant direct effects. The mediation analysis revealed that patient satisfaction significantly mediated the relationship between empathy and patient loyalty, while the mediating effect of satisfaction on the relationship between reliability and loyalty was weak or marginal. In contrast, satisfaction did not mediate the relationships between tangibles, responsiveness, or assurance and patient loyalty. These findings indicate that emotional and interpersonal aspects of healthcare services, particularly empathy, play a central role in enhancing patient satisfaction and loyalty. Therefore, hospitals are encouraged to strengthen healthcare worker–patient interactions to improve long-term patient loyalty.

Keywords: Service Quality, Patient Satisfaction, Patient Loyalty, Mediation, PLS-SEM.

INTRODUCTION

Quality healthcare services are a key factor in a hospital's success in building patient loyalty. Patient loyalty not only impacts the hospital's operational continuity but also reflects the public's image and trust in the healthcare institution (Kotler, P., & Keller, 2016). Service quality is a strategic element in increasing patient satisfaction, which in turn impacts long-term Loyalty, according to Parasuraman, A., Zeithaml, V. A., & Berry (1988) define service quality as a set of five main dimensions: reliability, Responsiveness, assurance, empathy, and tangibles. Patient satisfaction emerges as an evaluative response to their experience with hospital services. Several studies have shown that patient satisfaction acts as a mediating variable between service quality and patient loyalty (Aydin, S., & Ozer, 2005; Gounaris, 2005). This means that improving service quality can directly influence patient loyalty, but the effect will be more substantial if patients are satisfied with the service they receive. In the hospital context, patient satisfaction encompasses perceptions of medical personnel's professionalism, support from facilities, and empathetic personal interactions. PKU Muhammadiyah Wonogiri Hospital, as one of Indonesia's private hospitals, faces challenges in maintaining patient loyalty amid increasingly fierce healthcare competition. Empirical research examining the relationship between service quality, satisfaction, and patient loyalty at this hospital is still relatively limited, necessitating studies that can provide evidence and strategic recommendations. Recent research supports this model, for example, a study by Solehudin & Inas Syabanasyah (2023), which showed that service quality, patient value, and satisfaction significantly influence patient loyalty at a hospital in Jambi Province. Furthermore, (Puspita, D., & Paramata, 2024) found that all five dimensions of service quality (tangible, reliability, Responsiveness, assurance, and empathy) have a positive and significant effect on patient satisfaction and, ultimately, Loyalty. This study aims to analyze the influence of service quality dimensions on patient loyalty, with patient satisfaction as a mediating variable. The research used a quantitative survey approach with a sample of patients who had received services at least twice, and the data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-

SEM). By understanding this relationship, hospital management can design more effective service quality improvement strategies, thereby increasing patient satisfaction and maintaining patient loyalty. The results of this study are expected to provide practical contributions to hospitals by strengthening competitive advantage through improved service quality, as well as serving as a reference for further academic research on health service management.

LITERATURE REVIEW

Theoretical Review

1. Patient Satisfaction
   Patient satisfaction is a feeling of pleasure arising from meeting expectations for the service received (Pramono, 2019; Ridho, 2025; Sukmanawati, N., & Purwanti, 2022). This satisfaction is subjective and influenced by service quality, the environment, and hospital facilities. The better the service and facilities provided, the higher the level of patient satisfaction, which in turn plays a crucial role in maintaining patient loyalty.
2. Patient Loyalty
   Loyalty is a patient's commitment to use services consistently, make repeat purchases, and recommend services to others (Kurniawan, F., & Auva, 2022; Soedjarwadi et al., 2015). Loyal patients tend to return to the same hospital because of prior satisfactory experiences.
3. Quality of Service
   Service quality is an organization's ability to meet patient needs through a combination (ISO-9001-2015; Laila & Paramarta, 2020) of service characteristics and features. According to Parasuraman et al., service quality is measured through five dimensions:
   a. Tangibles: physical evidence and employees' appearance.
   b. Reliability: the ability to provide consistent and accurate service.
   c. Responsiveness: the ability to respond quickly to patient needs.
   d. Assurance: the ability to build patient trust and confidence.
   e. Empathy: personal attention and understanding of patient needs (Rinata, 2024).

Previous Research

Several studies show that service quality dimensions have a significant influence on customer/patient satisfaction and Loyalty:

1. Landari, A., (2021) → All dimensions of service quality have a significant effect on customer loyalty.
2. Rahim, A., (2021)→ Dimensions of service quality influence patient satisfaction in hospitals.
3. Jatmika (2023) and Aprillia (2023) → Responsiveness and Empathy have a significant effect on satisfaction, which then increases Loyalty.

Research Framework

This study examines the influence of five dimensions of service quality (Tangible, Reliability, Responsiveness, Assurance, Empathy) on patient satisfaction and patient loyalty, including the role of satisfaction as a mediating variable.

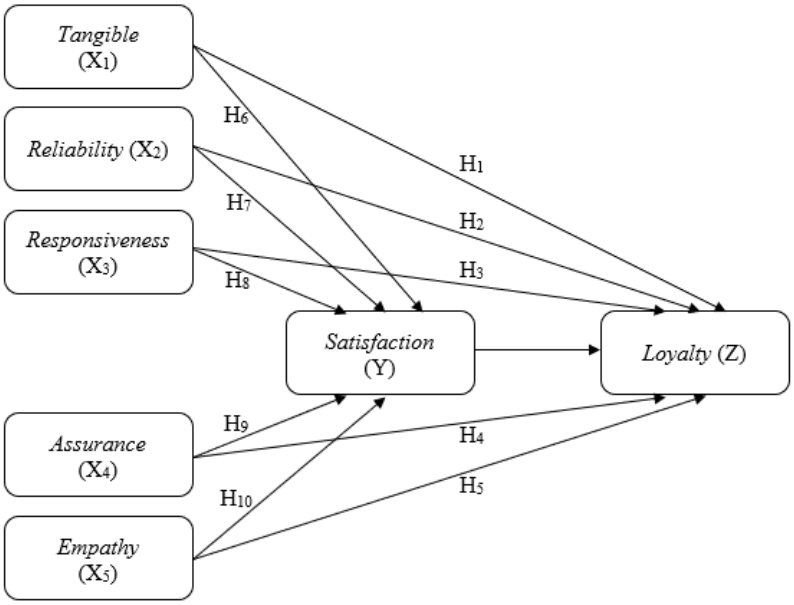

Figure 1. Framework Study

Hypothesis

Based on the conceptual framework that has been prepared, the hypothesis in this study is formulated as follows:

1. The Influence of Service Quality Dimensions on Patient Loyalty
   H1: Tangible has a positive and significant effect on patient loyalty.
   H2: Reliability has a positive and significant effect on patient loyalty.
   H3: Responsiveness has a positive and significant effect on patient loyalty.
   H4: Assurance has a positive and significant effect on patient loyalty.
   H5: Empathy has a positive and significant effect on patient loyalty.
2. The Influence of Service Quality Dimensions on Patient Satisfaction
   H6: Tangible has a positive and significant effect on patient satisfaction.
   H7: Reliability has a positive and significant effect on patient satisfaction.
   H8: Responsiveness has a positive and significant effect on patient satisfaction.
   H9: Assurance has a positive and significant effect on patient satisfaction.
   H10: Empathy has a positive and significant effect on patient satisfaction.
3. The Influence of Patient Satisfaction on Patient Loyalty
   H11: Patient satisfaction has a positive and significant effect on patient loyalty.
4. The Influence of Service Quality Dimensions on Patient Loyalty through Patient Satisfaction (Mediating Variable)
   H12: Tangible has a positive effect on patient loyalty through patient satisfaction as a mediating variable.
   H13: Reliability has a positive effect on patient loyalty through patient satisfaction as a mediating variable.
   H14: Responsiveness has a positive effect on patient loyalty through patient satisfaction as a mediating variable.
   H15: Assurance has a positive effect on patient loyalty through patient satisfaction as a mediating variable.
   H16: Empathy has a positive effect on patient loyalty through patient satisfaction as a mediating variable.

METHOD

Type and Design of Research

This study uses a quantitative, explanatory research design to analyze the causal relationship between service quality dimensions and patient loyalty, with satisfaction as a mediating variable. This approach was chosen to objectively test the hypothesis through statistical analysis.

Population and Sample

The population in this study was all outpatients at PKU Muhammadiyah Wonogiri Hospital. The sampling technique used was purposive sampling with the following criteria:

1. Patients aged ≥ 18 years,
2. Outpatients at PKU Muhammadiyah Wonogiri Hospital,
3. Patients who have visited at least 3 times in the last year.

The sample size was determined based on Ferdinand's (2014) guidelines, which is 5–10 times the number of indicators. With a total of 40 questions, the minimum sample size is 200 respondents.

Types and Sources of Data

This study used primary data obtained directly from respondents through a closed-ended questionnaire. Data were collected offline from outpatients who met the study criteria.

Data Collection Techniques

Data collection was carried out using a Likert scale questionnaire with five levels of answers:

1. Strongly Agree (5)
2. Agree (4)
3. Neutral (3)
4. Disagree (2)
5. Strongly Disagree (1)

The instruments are arranged based on the indicators of each research variable.

Research Variables

1. Independent Variable (X): Service Quality, consisting of:
   a. Tangible
   b. Reliability
   c. Responsiveness
   d. Assurance
   e. Empathy
2. Dependent Variable (Z): Patient Loyalty, with indicators:
   a. Word of Mouth
   b. Reluctant to move
   c. Make the hospital your first choice
3. Mediating Variable (Y): Patient Satisfaction, with indicators:
   a. Overall satisfaction
   b. Confirmation of expectations
   c. Ideal comparison.

Data Analysis Techniques

Data analysis was performed using Partial Least Squares – Structural Equation Modeling (PLS-SEM) with the help of SmartPLS software. The analysis stages include:

1. Outer Model Evaluation
   a. Convergent validity test (outer loading > 0.70)
   b. Discriminant validity test (cross loading and AVE > 0.50)
   c. Reliability test (Composite Reliability > 0.70 and Cronbach's Alpha > 0.60)
2. Inner Model Evaluation
   a. Testing the direct influence (path coefficient)
   b. Testing of indirect effects (specific indirect effect/mediation)
   c. Testing criteria: p-value < 0.05 and t-statistic > 1.96.

RESULTS AND DISCUSSION

Respondent Characteristics

This study involved 200 outpatients at PKU Muhammadiyah Wonogiri Hospital. Respondent characteristics are presented in Tables 1–3.

Table 1. Respondent Characteristics Based on Gender

Gender	Frequency	Percentage
Man	110	55%
Woman	90	45%
Total	**200**	**100%**

Table 2. Respondent Characteristics Based on Age

Age	Frequency	Percentage
18–23 years	30	15%
24–29 years	60	30%
>30 years	110	55%
Total	**200**	**100%**

Table 3. Respondent Characteristics Based on Education

Education	Frequency	Percentage
Junior High School	30	15%
Senior High School	100	50%
D3	25	12.5%
S1	45	22.5%
Total	**200**	**100%**

Based on the results of data collection from 200 respondents, patient care at PKU Muhammadiyah Wonogiri Hospital, the characteristics of respondents show a balanced distribution by gender, with the majority being men (110 people, 55%) and women (90 people, 45%). From the aspect age, some big respondents be in a group age over 30 years that is as many as 110 people (55%), followed by group age 24–29 years as many as 60 people (30%) and groups ages 18–23 years as many as 30 people (15%), which shows that service House Sick more Lots utilized by groups age adults. Meanwhile that, based on level education, the majority respondents own education last high school as many as 100 people (50%), followed by 45 people graduated from S1 (22.5%), 30 people graduated from SMP (15%), and 25 people graduated from D3 (12.5%), which indicates that respondents own background behind adequate education diverse so that capable represent perception patient from various level education.

Results of Measurement Model Analysis (Outer Model)

In this study, hypothesis testing was conducted using Partial Least Squares (PLS) analysis in SmartPLS 4. The following shows the PLS model scheme used in the testing process.

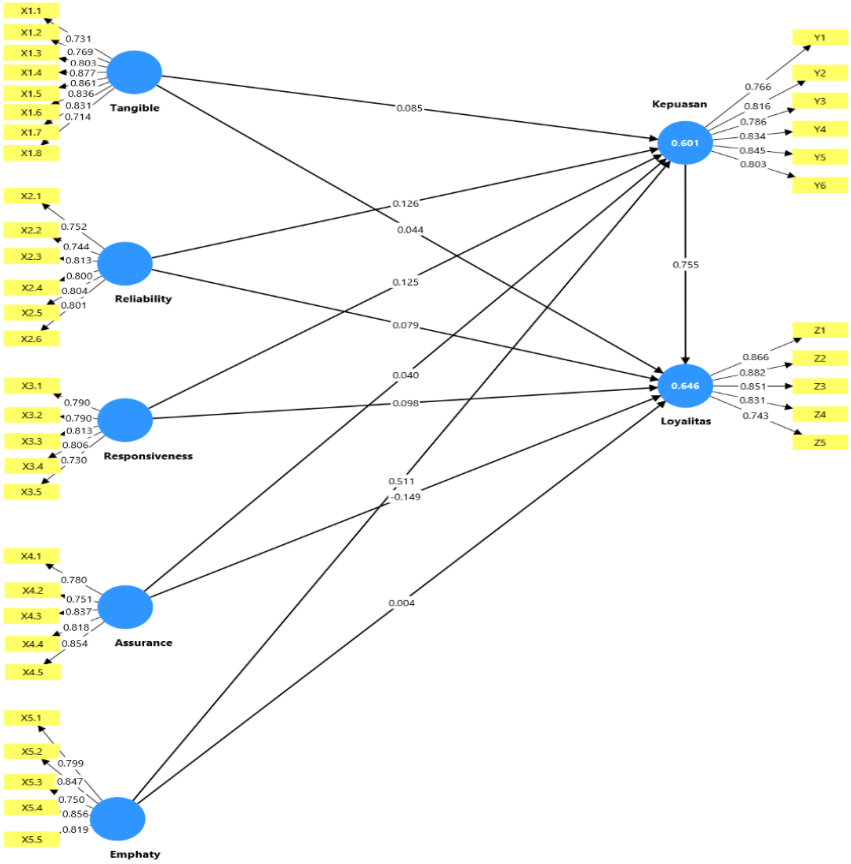

Figure 2. Outer Model

Convergent Validity Test (Outer Loading)

Convergent validity is evaluated through the outer loading value, with a criterion of ≥ 0.70 as the primary standard. Referring to Hair et al. (n.d.), indicators with values of 0.50–0.70 are still acceptable in early-stage research or complex models. SmartPLS processing results indicate that the outer loading value is used to ensure the appropriateness of indicators in measuring latent variables.

Table 4. Outer Loading Values

Indicator	Loading
X1.1 – X1.8 (Tangible)	0.714 – 0.877
X2 (Reliability)	0.744 – 0.813
X3 (Responsiveness)	0.730 – 0.813
X4 (Assurance)	0.751 – 0.854
X5 (Empathy)	0.750 – 0.856
Z (Loyalty)	0.743 – 0.882
Y (Satisfaction)	0.766 – 0.845

Based on the outer loading table, all indicators in each variable have a value of ≥ 0.70, indicating strong convergent validity (Hair et al., 2017). Thus, the indicators in the variables Assurance, Empathy, Satisfaction, Loyalty, Reliability, Responsiveness, and Tangible are declared valid and suitable for further analysis.

Discriminant Validity Test (AVE)

Discriminant validity is tested through cross-loading values, where each indicator must have the highest correlation with its original construct compared to other constructs (Hair et al. 2017). Furthermore, convergent validity is also evaluated through the AVE value, with a criterion of ≥ 0.50 as a sign that the construct has adequate validity. The cross-loading and AVE values indicate that the indicators and constructs in this study meet the required validity criteria.

Table 5. Average Variance Extracted (AVE) Value

Variables	AVE	Information
Tangible	0.672	Valid
Reliability	0.707	Valid
Responsiveness	0.702	Valid
Assurance	0.705	Valid
Empathy	0.686	Valid
Satisfaction	0.729	Valid
Loyalty	0.748	Valid

Based on the analysis results, all variables have an AVE value > 0.50, with the lowest value being 0.672 (Tangible) and the highest being 0.748 (Loyalty). This finding indicates that all constructs meet the convergent validity criteria based on AVE.

Reliability Test

Reliability testing was conducted to assess the instrument's consistency in measuring the construct, evaluated using Composite Reliability and Cronbach's Alpha (Sekaran, U., & Bougie, 2016). A construct is considered reliable if its Composite Reliability value is >0.70 indicating that the indicator reliably reflects the construct.

Table 6. Composite Reliability

Variables	Composite Reliability
Tangible	0.936
Reliability	0.907
Responsiveness	0.890
Assurance	0.904
Empathy	0.908
Satisfaction	0.919
Loyalty	0.920

All research variables have Composite Reliability above 0.70, namely Tangible (0.936), Reliability (0.907), Responsiveness (0.890), Assurance (0.904), Empathy (0.908), Satisfaction (0.919), and Loyalty (0.920), indicating that the research instrument is reliable and able to measure the construct consistently. Following served Cronbach's Alpha value for each variable in study:

Table 7. Cronbach's Alpha

	Cronbach's Alpha
Tangible	0.921
Reliability	0.876
Responsiveness	0.845
Assurance	0.867
Empathy	0.874
Satisfaction	0.894
Loyalty	

All research variables have Cronbach's Alpha ≥ 0.70, indicating that the construct is reliable and the instruments used are consistent and suitable for measurement.

Multicollinearity Test

Multicollinearity testing uses tolerance and VIF, with the criteria of being free from multicollinearity if tolerance > 0.1 or VIF < 5, to ensure that there is no high correlation between predictor variables.

Table 8. Collinearity Statistics (VIF)

	Satisfaction	Loyalty	Information
Tangible	1.809	1.827	Non-multicollinearity
Reliability	2.448	2.448	Non-multicollinearity

Responsiveness	2.591	2.630	Non-multicollinearity
Assurance	3.036	3.040	Non-multicollinearity
Empathy	2.711	3.365	Non-multicollinearity
Satisfaction		2.508	Non-multicollinearity

VIF test results show that all predictor variables have values below 5 (range 1.809–3.365), so the model is free from multicollinearity and is suitable for use in hypothesis analysis.

Results of Structural Model Analysis (Inner Model)

Direct Hypothesis Testing (Direct Effect)

Hypothesis testing was conducted using path coefficient values through a bootstrapping procedure to obtain T-statistics and p-values. A hypothesis is declared significant if the T-statistic is > 1.96 or the p-values < 0.05 at a 5% significance level. The results of the analysis are used to assess the direct influence of variables in the research model.

Table 9. Path Coefficient (Direct Effect)

Connection	Coefficient	T-Stat	P-Value	Information
Tangible → Satisfaction	0.016	0.288	0.774	Not significant
Reliability → Satisfaction	0.170	2.593	0.010	Significant
Responsiveness → Satisfaction	0.108	1.839	0.066	Not significant
Assurance → Satisfaction	0.354	4.672	0.000	Significant
Empathy → Satisfaction	0.339	5.302	0,000	Significant
Satisfaction → Loyalty	0.283	3.518	0.000	Significant
Tangible → Loyalty	0.119	2.083	0.038	Significant
Reliability → Loyalty	0.060	1.139	0.255	Not significant
Responsiveness → Loyalty	0.046	0.778	0.437	Not significant
Assurance → Loyalty	0.155	2.502	0.013	Significant
Empathy → Loyalty	0.245	4.103	0.000	Significant

The results of the hypothesis testing show that Reliability, Assurance, and Empathy have a positive and significant influence on Satisfaction, while Tangible and Responsiveness do not have a significant effect. Furthermore, Satisfaction has been proven to have a positive and significant effect on Loyalty. Tangible, Assurance, and Empathy variables had a positive and significant effect, while Reliability and Responsiveness did not show a significant effect. These findings confirm that certain service quality dimensions play an important role in increasing patient satisfaction and Loyalty.

Indirect Effect Testing

Indirect effects are tested through specific indirect effects, using the p-value as the basis for decision-making. A relationship is considered significant if the p-value is <0.05, indicating the role of the mediator variable in channeling the influence of the exogenous variable on the endogenous variable. Conversely, a p-value >0.05 indicates that the mediator plays no significant role, thus establishing a direct relationship Hair et al., 2021)

Table 10. Specific Indirect Effect (Satisfaction Mediation)

Indirect Relationship	Coefficient	T-Stat	P-Value	Information
Assurance → Satisfaction → Loyalty	0.030	0.511	0.609	Not significant
Empathy → Satisfaction → Loyalty	0.386	5,987	0.000	Significant
Reliability → Satisfaction → Loyalty	0.095	1.958	0.050	Not significant
Responsiveness → Satisfaction → Loyalty	0.095	1.400	0.162	Not significant
Tangible → Satisfaction → Loyalty	0.064	1.470	0.142	Not significant

The results of the specific indirect effect test indicate that satisfaction only significantly mediates the influence of empathy on Loyalty, and shows marginal mediation in the relationship between reliability and Loyalty. Meanwhile, satisfaction does not act as a mediator in the relationship between assurance, Responsiveness, and

tangibles on Loyalty.he results of the specific indirect effect test indicate that satisfaction only significantly mediates the influence of empathy on loyalty, and shows marginal mediation in the relationship between reliability and loyalty. Meanwhile, satisfaction does not act as a mediator in the relationship between assurance, responsiveness, and tangibles on loyalty.

Discussion

The findings of this study show that the five SERVQUAL dimensions have varying influences on patient satisfaction and loyalty. Overall, the results indicate that emotional and interpersonal aspects of service particularly empathy play a more central role in shaping patient responses than physical or operational service components. First, the empathy dimension demonstrates the strongest and most consistent influence, both on satisfaction and loyalty. Empathy shows a positive and significant effect on satisfaction, which subsequently leads to a significant indirect effect on loyalty. This indicates that healthcare workers' personal attention, sensitivity, and emotional support are crucial in fostering deeper patient trust and encouraging long-term loyalty. When patients feel understood and genuinely cared for, they are more likely to return and recommend the hospital to others.

Second, the assurance dimension shows a strong and significant direct influence on patient satisfaction as well as loyalty, highlighting the importance of patient trust, certainty, and perceived safety. Professionalism, competence, and the ability to instill confidence play an important role in shaping loyalty. However, although assurance strongly predicts satisfaction, the indirect effect of assurance on loyalty through satisfaction is not significant. This indicates that patients rely on assurance primarily through a direct pathway, suggesting that trust and security exert immediate influence on loyalty, rather than being channeled through satisfaction. Third, the reliability dimension also has a significant direct effect on satisfaction, reflecting the importance of consistent, accurate, and dependable medical and administrative services. However, the mediating effect of satisfaction in the relationship between reliability and loyalty is only borderline or marginal. This suggests that patients may value reliability as part of expected service standards, but its influence on loyalty is not as strong unless accompanied by other emotional or interpersonal service elements.

Fourth, the responsiveness and tangible dimensions show limited influence in this study. Responsiveness does not significantly affect satisfaction or loyalty, indicating that the speed of service or responsiveness alone is insufficient to generate loyalty. This finding may occur because patients perceive responsiveness as a basic service expectation rather than an added value. Similarly, the tangible dimension has a weak influence on satisfaction and loyalty. Physical facilities, cleanliness, and equipment quality appear to be necessary factors for maintaining baseline service quality, but these aspects do not significantly drive loyalty when interpersonal service elements are more dominant. Finally, the mediating role of patient satisfaction is confirmed to be strong and effective only in the Empathy → Satisfaction → Loyalty pathway, while the mediating effects on other dimensions are weak or insignificant. This suggests that satisfaction in the healthcare context is more significantly shaped by emotional engagement, rather than by physical facilities or operational efficiency. Overall, the results emphasize that while hospitals must maintain adequate physical and operational quality, patient loyalty is more profoundly shaped by interpersonal and emotional interactions, particularly empathy and assurance. Strengthening communication quality, emotional support, and patient-centered interactions is therefore essential in enhancing patient satisfaction and loyalty. This study has several limitations that should be considered when interpreting the findings. First, the research was conducted in a single hospital, which limits the generalizability of the results to healthcare institutions with different service systems or patient characteristics. Second, the use of purposive sampling may introduce selection bias, as the sample consists only of patients who met specific criteria and may not fully represent the broader outpatient population. Third, the study relies on self-reported questionnaire data, which may be affected by response bias and may not fully capture actual patient experiences or behavioral intentions. Finally, the study focuses solely on service quality and patient satisfaction as predictors of loyalty, while other important factors—such as trust, perceived value, hospital image, and emotional attachment were not included in the model. These limitations suggest that the findings should be interpreted with caution and indicate opportunities for future research to develop more comprehensive models.

CONCLUSION

Conclusion

Based on the research results, it can be concluded that:

1. The empathy dimension has a positive and significant influence on patient loyalty, both directly and indirectly through satisfaction as a mediating variable, indicating the crucial role of emotional connection and personal attention in building patient loyalty.
2. The assurance dimension has a positive and significant direct effect on patient loyalty, but does not show a significant indirect effect through satisfaction, indicating that its influence on loyalty occurs mainly through direct pathways.
3. The dimensions of tangibles and responsiveness show low or insignificant effects on patient loyalty, both directly and indirectly through satisfaction. Meanwhile, reliability shows a weak or borderline indirect effect through satisfaction, suggesting a limited mediating role.
4. Patient satisfaction functions as an effective mediator primarily in the Empathy → Satisfaction → Loyalty pathway, while its mediating role in other relationships is weak or statistically insignificant.
5. Physical aspects of service and operational factors such as accuracy and speed of service are generally perceived as basic expectations by patients and therefore play a less dominant role in shaping satisfaction and loyalty compared to interpersonal and emotional aspects of care.

Suggestion

1. For hospital management:
   Hospital management is recommended to prioritize the improvement of empathy by delivering more personalized services, showing genuine individual attention, maintaining warm and effective communication, and conducting consistent post-treatment follow-ups to strengthen long-term relationships with patients. Efforts to enhance assurance should focus on strengthening patient trust and sense of security through transparent procedures, clear information delivery, and professionalism of healthcare workers, as assurance has a strong direct effect on patient loyalty. Reliability and responsiveness should be improved through the implementation of clear standard operating procedures, continuous monitoring of service performance, and faster handling of patient complaints, even though their direct and indirect effects on loyalty were found to be weak. These improvements remain important to maintain basic service quality standards. Attention to tangible aspects is still necessary by improving the comfort of physical facilities, maintaining cleanliness, and upgrading medical equipment, although these factors were not major determinants of loyalty in this study. Hospitals are also encouraged to continuously enhance patient satisfaction, particularly by strengthening emotional and interpersonal aspects of care, as satisfaction plays a key mediating role mainly in strengthening the relationship between empathy and patient loyalty.
2. For future researchers:
   Future researchers are encouraged to increase the sample size and expand the research setting to multiple hospitals in order to improve the generalizability of the findings. It is also recommended to incorporate additional variables that may influence patient loyalty, such as trust, hospital image, perceived value, and emotional attachment. Furthermore, the use of mixed methods, combining quantitative and qualitative approaches, is suggested to obtain deeper and more comprehensive insights into the mechanisms that influence patient loyalty.

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