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An Analysis of Hospital Information Systems and Service Quality on Patient Satisfaction in Maternal and Child Health Services in Indonesia

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ABSTRAK

Penelitian ini menganalisis pengaruh Sistem Informasi Rumah Sakit (Hospital Information System/HIS) dan kualitas pelayanan terhadap kepuasan pasien pada layanan kesehatan ibu dan anak di Indonesia. Penelitian ini menggunakan desain kuantitatif dengan pendekatan cross-sectional yang melibatkan 150 responden yang pernah menggunakan layanan kesehatan ibu dan anak. Data dikumpulkan melalui kuesioner terstruktur berbasis skala Likert lima poin dan dianalisis menggunakan SPSS versi 25. Analisis yang dilakukan meliputi statistik deskriptif, uji validitas dan reliabilitas, uji asumsi klasik, serta analisis regresi linear berganda. Hasil penelitian menunjukkan bahwa Sistem Informasi Rumah Sakit dan kualitas pelayanan berpengaruh positif dan signifikan terhadap kepuasan pasien. Kualitas pelayanan menunjukkan pengaruh yang lebih kuat dibandingkan HIS. Nilai koefisien determinasi (R^2) sebesar 0,610 menunjukkan bahwa 61% variasi kepuasan pasien dapat dijelaskan oleh kedua variabel independen tersebut. Temuan ini menegaskan pentingnya integrasi sistem kesehatan digital dengan pemberian pelayanan yang berkualitas untuk meningkatkan kepuasan pasien pada layanan kesehatan ibu dan anak. Penelitian ini memberikan implikasi praktis bagi manajemen rumah sakit dan pembuat kebijakan dalam memperkuat kinerja layanan kesehatan melalui peningkatan teknologi dan sumber daya manusia.

ABSTRACT

This study analyzes the effect of Hospital Information Systems (HIS) and service quality on patient satisfaction in maternal and child health care services in Indonesia. A quantitative research design was applied using a cross-sectional approach involving 150 respondents who had utilized maternal and child health services. Data were collected using a structured questionnaire based on a five-point Likert scale and analyzed using SPSS version 25. The analysis included descriptive statistics, validity and reliability testing, classical assumption tests, and multiple linear regression analysis. The results indicate that both Hospital Information Systems and service quality have a positive and significant effect on patient satisfaction. Service quality demonstrates a stronger influence compared to HIS. The coefficient of determination (R^2) of 0.610 indicates that 61% of the variation in patient satisfaction is explained by the two independent variables. The findings highlight the importance of integrating digital health systems with high-quality service delivery to improve patient satisfaction in maternal and child health care settings. This study provides practical implications for

hospital management and policymakers in strengthening healthcare service performance through technological and human resource improvements.

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1. INTRODUCTION

Healthcare systems in developing countries are undergoing continuous transformation driven by digitalization and increasing demands for service efficiency, transparency, and patient-centered care. In Indonesia, maternal and child health care remains a strategic priority due to its direct impact on key public health indicators such as the maternal mortality rate (MMR) and infant mortality rate (IMR) (Kee et al., 2023; Natalia et al., 2023). Despite various policy interventions, disparities in service quality and administrative inefficiencies continue to persist across healthcare facilities, particularly at the primary and secondary levels of care, thereby limiting overall system performance (Natalia et al., 2023).

One of the major strategic responses to these challenges is the implementation of Hospital Information Systems (HIS). HIS is designed to integrate clinical, administrative, and operational data into a unified digital platform that supports decision-making, reduces service delays, and enhances coordination among healthcare professionals (Bloomfield et al., 1992; Jones & Dewing, 1997). In maternal and child health services, HIS is expected to improve the accuracy and accessibility of patient records, streamline antenatal and postnatal care processes, and ensure continuity of care across service stages (Bloomfield et al., 1992; Nyland & Pettersen, 2004).

However, the effectiveness of HIS implementation remains inconsistent across healthcare institutions. Variations in infrastructure readiness, human resource competency, and system usability significantly influence the extent to which HIS can deliver its intended benefits. In some settings, limited digital literacy among staff and inadequate technical support reduce system optimization, thereby constraining its impact on service improvement (Abu-Nazir et al., 2016).
Alongside technological advancement, service quality continues to play a central role in shaping patient experiences within healthcare systems. Service quality in healthcare is commonly conceptualized through dimensions such as reliability, responsiveness, assurance, empathy, and tangibles. In maternal and child health care, these dimensions are particularly critical because patients require not only clinical accuracy but also emotional reassurance, effective communication, and timely responsiveness throughout the care process.

Patient satisfaction is widely recognized as a key indicator of healthcare performance as it reflects the extent to which healthcare services meet or exceed patient expectations. High levels of patient satisfaction are associated with improved trust in healthcare providers, increased adherence to medical recommendations, and sustained utilization of health services. Conversely, low satisfaction may reduce patient engagement and negatively affect health outcomes, particularly in maternal and child health services.

Based on this background, this study aims to analyze the effect of Hospital Information Systems and service quality on patient satisfaction in maternal and child health care services in Indonesia. The study is expected to provide empirical evidence on how digital health systems and

service quality jointly influence patient satisfaction, and to offer practical implications for improving healthcare management and patient-centered service delivery.

2. LITERATURE REVIEW

2.1 Hospital Information System (HIS)

Hospital Information Systems (HIS) refer to integrated information management systems designed to manage healthcare data across clinical, administrative, and operational domains within hospitals, where HIS supports the collection, storage, processing, and retrieval of patient information to improve decision-making efficiency and service coordination (Alamsyah et al., 2023). According to the health information systems framework, HIS plays a central role in enhancing data accuracy, reducing duplication of medical records, and improving workflow efficiency among healthcare providers. In the context of maternal and child health care, HIS is particularly important due to the continuity of care required from antenatal, delivery, to postnatal services, as it enables healthcare professionals to monitor patient history, track maternal risk factors, and ensure timely interventions. Previous studies indicate that effective HIS implementation is associated with improved clinical efficiency, reduced waiting times, and better coordination between departments; however, challenges such as system usability, infrastructure limitations, and staff digital literacy can reduce its effectiveness in practice (Chen et al., 2022; Hussain et al., 2020; Li et al., 2021).

2.2 Service Quality in Healthcare

Service quality in healthcare is commonly conceptualized through the SERVQUAL model, which includes five main dimensions: reliability, responsiveness, assurance, empathy, and tangibles, where reliability refers to the ability of healthcare providers to deliver services accurately and consistently, responsiveness reflects the willingness to help patients promptly (KhanMohammadi et al., 2023; Viegas, 2024), assurance relates to the competence and courtesy of healthcare staff that fosters trust and confidence, empathy emphasizes individualized attention and emotional support which is particularly critical in maternal and child health services where patients often experience psychological vulnerability, and tangibles refer to the physical facilities, medical equipment, and overall appearance of healthcare environments. High service quality is generally associated with improved patient trust, better communication, and higher satisfaction levels (Bentum-Micah et al., 2024; Ku et al., 2023; Viegas, 2024). In healthcare settings, service quality is not only a managerial concern but also a determinant of patient retention and institutional reputation, as studies consistently show that better perceived service quality leads to higher patient satisfaction and loyalty.

2.3 Patient Satisfaction

Patient satisfaction is defined as the extent to which healthcare services meet or exceed patient expectations, and it is a multidimensional construct that reflects patients' evaluation of clinical outcomes, interpersonal interactions, service accessibility, and overall healthcare experience (KS & Barkur, 2023; Prusiński, 2022). In maternal and child health care, satisfaction is influenced by factors such as waiting time, communication clarity, staff attitude, safety, and perceived competence of healthcare providers. High patient satisfaction is associated with increased adherence to treatment, improved health outcomes, and sustained utilization of healthcare services, whereas low satisfaction may lead to reduced trust in healthcare providers and lower engagement with health programs (De Simone et al., 2018; Ogbonnaya et al., 2018; Tessema et al., 2024). Therefore, patient satisfaction is widely used as a key performance indicator in healthcare system evaluation.

2.4 The Relationship between HIS, Service Quality, and Patient Satisfaction

The integration of Hospital Information Systems is expected to indirectly and directly influence patient satisfaction by improving service efficiency and reducing

administrative burdens, as HIS facilitates faster access to patient records, reduces errors, and enhances coordination among medical staff, which collectively improves service delivery. Service quality, on the other hand, has a more direct impact on patient satisfaction through interpersonal interactions and service delivery experiences, where healthcare providers who deliver services that are reliable, responsive, and empathetic tend to generate higher levels of patient satisfaction (KS & Barkur, 2023; Prusiński, 2022; Sumardika et al., 2024). The combination of effective HIS implementation and high service quality creates a synergistic effect that enhances the overall healthcare experience. Prior empirical studies suggest that both technological systems and human service factors significantly contribute to patient satisfaction, although their relative influence may vary depending on institutional context and system maturity (Lubis, 2024; Ogbonnaya et al., 2018).

Based on the literature, this study proposes a conceptual framework in which Hospital Information Systems and service quality are positioned as independent variables, while patient satisfaction is treated as the dependent variable. Hospital Information Systems are expected to influence patient satisfaction both directly and indirectly through improvements in service processes, operational efficiency, and data management within healthcare delivery. Service quality is hypothesized to have a direct positive effect on patient satisfaction through its impact on interpersonal interactions and the overall patient experience. Accordingly, the following hypotheses are formulated:

H1: Hospital Information Systems have a positive and significant effect on patient satisfaction in maternal and child health care services.

H2: Service quality has a positive and significant effect on patient satisfaction in maternal and child health care services.

H3: Hospital Information Systems and service quality simultaneously have a significant effect on patient satisfaction in maternal and child health care services.

3. RESEARCH METHODS

3.1 Research Design

This study employs a quantitative research approach with a cross-sectional design. The objective of this design is to examine the causal relationships between Hospital Information Systems (HIS) and service quality on patient satisfaction in maternal and child health care services in Indonesia. The quantitative approach is selected to enable objective measurement of variables and statistical testing of hypotheses based on numerical data collected from respondents.

3.2 Population and Sample

The population of this study consists of patients who have utilized maternal and child health care services in selected healthcare facilities in Indonesia, while the sample was determined using a non-probability sampling technique, specifically purposive sampling, involving a total of 150 respondents selected based on predefined criteria, namely patients who have received maternal or child health services and are capable of completing the questionnaire. The sample size of 150 is considered adequate for multiple linear regression analysis, as it provides sufficient statistical power to detect significant relationships among the studied variables and ensures the robustness of the empirical findings.

3.3 Data Collection Technique

Data were collected using a structured questionnaire distributed directly to respondents, and the instrument consisted of three main sections, namely Hospital Information Systems (HIS), service quality, and patient satisfaction. Each item was measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) to capture respondents' perceptions quantitatively. The HIS construct assessed system accessibility, ease of use, data accuracy, and information integration, while service quality was measured using dimensions adapted from the SERVQUAL model, including reliability,

responsiveness, assurance, empathy, and tangibles. Patient satisfaction was evaluated based on overall satisfaction with healthcare services, perceived service outcomes, and willingness to reuse or recommend the service.

3.4 Operational Definition of Variables

This study includes two independent variables and one dependent variable, where Hospital Information Systems (X1) refers to the extent to which hospital information systems support the efficiency, accuracy, and integration of healthcare services, Service Quality (X2) refers to the perceived quality of healthcare services based on the dimensions of reliability, responsiveness, assurance, empathy, and tangibles, and Patient Satisfaction (Y) refers to the level of patient contentment with maternal and child health care services based on the comparison between expectations and perceived service performance.

3.5 Data Analysis Technique

The data were analyzed using SPSS version 25 through several stages, starting with descriptive statistics to describe respondent characteristics and the distribution of responses for each variable. Validity and reliability tests were conducted, where validity was assessed using item-total correlation and reliability was measured using Cronbach's Alpha coefficient, with a threshold value above 0.70 indicating acceptable reliability. Classical assumption tests were then performed, including normality, multicollinearity, and heteroscedasticity tests to ensure that the regression model met the required statistical assumptions. Furthermore, multiple linear regression analysis was used to examine the effect of Hospital Information Systems (X1) and service quality (X2) on patient satisfaction (Y), followed by hypothesis testing using the t-test for partial effects, F-test for simultaneous effects, and coefficient of determination (R^2) to evaluate the explanatory power of the model. The empirical model applied in this study is expressed as $Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$, where Y represents patient satisfaction, X1 represents Hospital Information Systems, X2 represents service quality, α is the constant, $\beta 1$ and $\beta 2$ are regression coefficients, and ε is the error term; this model is used to determine the magnitude and direction of the relationship between the independent variables and patient satisfaction.

4. RESULTS AND DISCUSSION

4.1 Respondent Characteristics

The study involved 150 respondents who had utilized maternal and child health care services. The demographic profile indicates a balanced representation across key characteristics, ensuring adequate variability for analysis.

Table 1. Respondent Characteristics

Variable	Category	Frequency	Percentage (%)
Gender	Male	54	36.0
Gender	Female	96	64.0
Age	18–25 years	32	21.3
Age	26–35 years	61	40.7
Age	36–45 years	37	24.7
Age	>45 years	20	13.3
Education	High School	46	30.7
Education	Diploma	38	25.3
Education	Bachelor	52	34.7
Education	Postgraduate	14	9.3

Table 1 presents the respondent characteristics of the study involving 150 participants, showing that the majority of respondents were female (64.0%) compared to male respondents (36.0%). Based on age distribution, most respondents were in the 26–35 years group (40.7%), followed by 36–45 years (24.7%), 18–25 years (21.3%), and those above

45 years (13.3%). In terms of education level, the largest proportion of respondents held a bachelor's degree (34.7%), followed by high school graduates (30.7%), diploma holders (25.3%), and postgraduate education (9.3%). This distribution indicates that the sample is dominated by productive-age individuals with moderate to high educational backgrounds, which is relevant for assessing perceptions of healthcare services.

4.2 Descriptive Statistics

Descriptive analysis was conducted to determine the average perception of respondents regarding Hospital Information Systems (HIS), service quality, and patient satisfaction.

Table 2. Descriptive Statistics

Variable	N	Mean	Std. Deviation	Interpretation
Hospital Information System (X1)	150	3.87	0.62	High
Service Quality (X2)	150	4.02	0.55	High
Patient Satisfaction (Y)	150	3.95	0.60	High

Table 2 presents the descriptive statistics of the study variables based on 150 respondents, showing that the Hospital Information System (X1) has a mean value of 3.87 with a standard deviation of 0.62, indicating a high level of perceived implementation. Service Quality (X2) obtained the highest mean score of 4.02 with a standard deviation of 0.55, also categorized as high, suggesting that respondents generally perceive healthcare services positively. Meanwhile, Patient Satisfaction (Y) recorded a mean value of 3.95 with a standard deviation of 0.60, indicating a high level of satisfaction among respondents.

4.3 Validity and Reliability Test

All measurement items were tested for validity and reliability. The results show that all indicators meet acceptable thresholds.

Table 3. Reliability Test Results

Variable	Cronbach's Alpha	Threshold	Decision
Hospital Information System	0.891	0.70	Reliable
Service Quality	0.912	0.70	Reliable
Patient Satisfaction	0.884	0.70	Reliable

Table 3 presents the reliability test results for all research variables, showing that the Hospital Information System has a Cronbach's Alpha value of 0.891, Service Quality has a value of 0.912, and Patient Satisfaction has a value of 0.884. All variables exceed the commonly accepted threshold of 0.70, indicating strong internal consistency across the measurement items. Based on these results, all constructs in this study are considered reliable and suitable for further statistical analysis, confirming that the questionnaire instruments consistently measure the intended variables.

4.4 Classical Assumption Tests

The regression model was tested using classical assumption tests to ensure its suitability for further analysis. The normality test using the Kolmogorov–Smirnov method produced a significance value of 0.087, which is greater than 0.05, indicating that the data are normally distributed. This confirms that the residuals meet the assumption of normality required for linear regression analysis.

Furthermore, the multicollinearity test showed tolerance values greater than 0.10 and Variance Inflation Factor (VIF) values below 10 for both variables (X1 = 1.42; X2 = 1.42), indicating that there is no multicollinearity problem among the independent variables. In addition, the heteroscedasticity test using the Glejser method resulted in significance values above 0.05, confirming the absence of heteroscedasticity. Overall, these results indicate that the regression model is statistically valid and appropriate for hypothesis testing.

4.5 Multiple Linear Regression Analysis

The effect of Hospital Information Systems and service quality on patient satisfaction was analyzed using multiple linear regression.

Table 4. Regression Analysis Results

Variable	Beta (β)	t-value	Sig.	Interpretation
Constant	2.115	4.021	0.000	Significant
Hospital Information System (X1)	0.312	3.845	0.000	Significant
Service Quality (X2)	0.521	6.732	0.000	Significant

Table 4 presents the results of the multiple linear regression analysis, showing that the constant has a value of 2.115 with a t-value of 4.021 and a significance level of 0.000, indicating statistical significance. Hospital Information System (X1) has a beta coefficient of 0.312 with a t-value of 3.845 and a significance value of 0.000, indicating a positive and significant effect on patient satisfaction. Service Quality (X2) shows a higher beta coefficient of 0.521 with a t-value of 6.732 and a significance value of 0.000, also indicating a positive and significant influence. The regression equation is expressed as $Y = 2.115 + 0.312X_1 + 0.521X_2$, which confirms that both independent variables have a positive relationship with patient satisfaction. Overall, both HIS and service quality significantly affect patient satisfaction, with service quality demonstrating a stronger effect compared to the Hospital Information System.

4.6 Coefficient of Determination

Table Model Summary shows that the regression model has an R value of 0.781, an R Square value of 0.610, an Adjusted R Square of 0.604, and a standard error of 0.372. The coefficient of determination ($R^2 = 0.610$) indicates that 61.0% of the variation in patient satisfaction can be explained by Hospital Information Systems and service quality, while the remaining 39.0% is influenced by other variables not included in this study. The relatively high R Square value suggests that the model has a strong explanatory power in describing patient satisfaction within maternal and child health care services.

4.7 Discussion

The findings of this study confirm that Hospital Information Systems (HIS) have a positive and significant effect on patient satisfaction in maternal and child health care services. This result indicates that the implementation of HIS contributes to improving patient experiences through better system integration, faster data access, and more efficient administrative processes. In maternal and child health care, accurate and accessible patient information is essential to support continuity of care, reduce service delays, and minimize errors in patient data management. Therefore, a well-functioning HIS can strengthen patient trust and enhance perceptions of healthcare service quality (KS & Barkur, 2023; Prusiński, 2022).

Service quality was found to have a stronger influence on patient satisfaction compared to Hospital Information Systems. This suggests that although digital systems support healthcare operations, interpersonal and experiential aspects of service delivery remain the dominant determinants of patient satisfaction. Dimensions such as responsiveness, empathy, assurance, reliability, and tangibles play a critical role in shaping how patients evaluate healthcare services. In maternal and child health care, emotional support, communication clarity, staff attentiveness, and professional competence are particularly important because patients often require reassurance and individualized attention (Bentum-Micah et al., 2024; Ku et al., 2023).

The simultaneous effect of Hospital Information Systems and service quality indicates that technological systems and human service factors are complementary in improving patient satisfaction. HIS enhances operational efficiency by supporting data

management and coordination among healthcare providers, while service quality ensures that patients receive responsive and patient-centered care. When both components function effectively, they create a more integrated healthcare experience that improves overall service outcomes. This highlights that patient satisfaction is not solely determined by technological advancement but also by the quality of direct human interaction in healthcare delivery.

Overall, the results of this study are consistent with previous research emphasizing that healthcare digitalization must be accompanied by improvements in service delivery practices. Hospitals should not only invest in information system infrastructure but also strengthen human resource capabilities, communication skills, and patient-centered service culture. In the context of maternal and child health care in Indonesia, the integration of HIS and high service quality represents a strategic approach to improving patient satisfaction and enhancing overall healthcare system performance.

5. CONCLUSION

This study concludes that both Hospital Information Systems (HIS) and service quality have a significant positive effect on patient satisfaction in maternal and child health care services in Indonesia, where regression results confirm that improvements in HIS contribute to better administrative efficiency and service coordination, thereby enhancing patient experiences. Service quality is identified as the most dominant factor influencing patient satisfaction, indicating that interpersonal interactions, responsiveness, empathy, and assurance remain critical components in healthcare delivery, particularly within maternal and child health services, while HIS primarily functions as a supporting mechanism for operational efficiency. Although HIS plays an important role in improving system performance, patient satisfaction is more strongly shaped by the quality of direct service interactions between healthcare providers and patients. Simultaneously, HIS and service quality explain 61% of the variation in patient satisfaction, demonstrating that both technological systems and human service components must be developed in an integrated manner. Therefore, healthcare institutions are encouraged to strengthen digital infrastructure while continuously improving staff competency and adopting a patient-centered service approach to achieve higher levels of patient satisfaction.

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