

# THE IMPLEMENTATION OF LEAN HEALTHCARE AS AN EFFORT TO IMPROVE THE QUALITY AND PATIENT SATISFACTION IN OUTPATIENT SERVICES: A CASE STUDY AT BONTANG ISLAMIC HOSPITAL

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	ABSTRACT
Keywords: Lean	This study aims to identify the influence of Lean
Healthcare, service quality,	Healthcare, including service quality, cost, and delivery
cost, delivery speed, patient	speed, on patient satisfaction in Rumah Sakit Islam
satisfaction, Rumah Sakit	Bontang outpatient services. The sample comprises 376
Islam Bontang, outpatient	selected from 6,200 patients using the Simple Random
services	Sampling method. This research employs a quantitative
	approach with descriptive and verification methods. Data
	were collected through questionnaires filled out by
	respondents, and the analysis was conducted using
	multiple linear regression with the assistance of SPSS
	software. The results indicate that service quality, cost,
	and delivery speed significantly affect patient
	satisfaction both partially and simultaneously. In
	conclusion, implementing Lean Healthcare has improved
	patient satisfaction in Rumah Sakit Islam Bontang
	outpatient services.

#### **INTRODUCTION**

Hospitals must provide optimal and safe healthcare services, emphasizing quality and cost control, as stipulated in Indonesia's Ministry of Health Regulation No. 30 of 2022 on National Indicators for Healthcare Quality. This aligns with the World Health Organization's (WHO) definition of hospitals as integral social and health institutions providing comprehensive disease treatment and prevention care. Furthermore, Indonesia's Ministry of Health Regulation No. 3 of 2020 elaborates that hospitals are institutions delivering holistic health services, including inpatient, outpatient, and emergency care.

Bontang Islamic Hospital, classified as a Type C hospital, delivers various healthcare services, encompassing 16 outpatient clinics, including general medicine, pediatrics, dentistry, obstetrics, and other specialties. Serving approximately 6,200 outpatient visits monthly, the hospital is supported by a capable workforce of 19 general practitioners, six dentists, and 26 specialists. However, despite its extensive services, operational inefficiencies such as lengthy queues, prolonged pharmacy waiting times, and delays in diagnostic results contribute to suboptimal patient satisfaction, necessitating strategic improvements (Wau & Purba, 2019).

Patients critically evaluate healthcare providers in the competitive globalization landscape through easily accessible information from media sources. Consequently, hospitals face growing pressure to deliver high-quality, patient-centered services while maintaining cost efficiency. Bernard (2009) highlights that patient satisfaction is critical for sustaining loyalty and enhancing a hospital's competitive advantage. This underscores the importance of addressing operational bottlenecks that hinder the delivery of satisfactory healthcare services.

One effective approach to tackling these challenges is Lean Healthcare, which focuses on eliminating waste to deliver maximum patient value. Womack and Jones (2003) define Lean Healthcare as a methodology for optimizing processes, reducing redundancies, and ensuring efficient delivery of healthcare services. Internationally, Lean principles have demonstrated significant success. For example, by adopting Lean methods, Boston General Hospital reduced patient waiting times from 90 to 45 minutes (Sands, 2016). Similarly, ThedaCare in Wisconsin improved orthopedic surgical processes, cutting wait times from 14 weeks to 31 hours (Toussaint, 2013). Avera McKennan in South Dakota achieved a 29% reduction in hospital stays and avoided \$1.25 million in additional costs (Dickson, 2009).

In Indonesia, the adoption of Lean Healthcare has also shown promising results. For instance, Pondok Indah Hospital in Jakarta successfully improved patient flow in its emergency department by reducing waiting times and enhancing process efficiency (Suharno, 2018). Similarly, Airlangga University Hospital in Surabaya implemented Lean principles to optimize operations in its emergency and surgical units, leading to better coordination and reduced waste (Hartono, 2019). These examples underscore the potential of Lean Healthcare in addressing systemic inefficiencies and improving patient outcomes.

At Bontang Islamic Hospital, Lean Healthcare was introduced in 2022 to address inefficiencies in outpatient services. Preliminary evaluations revealed persistent delays in registration, pharmacy services, and diagnostic procedures, contributing to declining patient satisfaction levels over the past three years. Antony et al. (2019) emphasize that Lean Healthcare enhances service quality, reduces costs, and accelerates service delivery, aligning with the hospital's goals of improving operational efficiency and patient satisfaction. Additionally, Amelia et al. (2018) identified common forms of waste in outpatient services, including excessive waiting times, redundant tasks, and inefficient resource allocation, highlighting the importance of Lean methodologies in streamlining healthcare operations.

This study aims to evaluate the impact of Lean Healthcare implementation on the quality, cost, and delivery of outpatient services at Bontang Islamic Hospital. Specifically, it seeks to measure its effect on patient satisfaction, assess the extent to which Lean principles address inefficiencies, and provide actionable recommendations to enhance service quality, efficiency, and sustainability in the hospital's outpatient department.

#### **METHOD**

#### **Research Object**

The object of this study is the outpatient clinic patients of Rumah Sakit Islam Bontang, located in Bontang City, East Kalimantan Province. Rumah Sakit Islam Bontang began as Klinik Bersalin YABIS in 1994 and transitioned into a Class D hospital with 55 beds in 2012. It has since grown to a Class C hospital with 100 beds, offering outpatient, inpatient, and emergency services. The outpatient services include 16 clinics such as General Practice, Dentistry, Pediatrics, and others, serving approximately 6,200 patients monthly.

#### **Research Methods**

This study employs a scientific methodology characterized by rationality, empiricism, and systematic organization to achieve specific objectives. According to Sugiyono (2005), the research combines quantitative and qualitative approaches. Quantitative research focuses on numerical data analyzed statistically, while qualitative research explores textual and visual data. This dual approach ensures comprehensive analysis and validation of findings.

#### **Methods Employed**

The study utilizes descriptive and verificative methods. Descriptive analysis provides insights

into strategies to enhance patient satisfaction, while verificative analysis tests hypotheses using field data. Variables such as service quality, costs, and delivery speed are evaluated using multiple linear regression in a quantitative framework. Data collected via questionnaires is processed with SPSS, Microsoft Excel, and the Method of Successive Intervals (MSI), converting ordinal data into interval data for statistical analysis.

## **Data Types and Sources**

Data is categorized as qualitative and quantitative (Abdurahman, 2018). Qualitative data includes characteristics and categories, often subjective but convertible to ordinal data, while quantitative data involves numerical values and objective interpretation. This study gathers quantitative data through questionnaires distributed to outpatient clinic patients, supplemented by documentation such as patient visit records for secondary data.

## **Population and Sample**

This study uses simple random sampling to ensure equal representation of the population. The population includes 6,200 outpatient clinic patients at Rumah Sakit Islam Bontang. Using the Slovin formula with a 5% margin of error, a sample size of 376 respondents is determined, ensuring statistical representation of the population.

## Variables and Operational Definitions

The study identifies independent variables as Service Quality (X1), Cost (X2), and Delivery (X3), while the dependent variable is Patient Satisfaction (Y) (Sugiyono, 2018). Operational definitions translate these concepts into measurable indicators using an ordinal scale for data collection. For example, patient satisfaction is measured by service expectations and repeat visits, while performance is assessed through speed and accuracy in services.

## **Data Collection Technique**

This study employed a survey method using questionnaires to collect data. According to Sugiyono (2013, as cited in Alfiani, 2018:48), a questionnaire is a data collection technique that provides written questions or statements for respondents to answer. This method is particularly efficient when the variables to be measured are well-defined. The questionnaire was structured with closed-ended questions, providing predefined answer choices for respondents.

#### **Data Processing Technique**

Data processing was conducted manually and electronically, utilizing calculators and computers. The process involved several stages: editing to correct incomplete or unclear responses; scoring by assigning numerical weights to questionnaire results; coding to convert categorical data into numerical formats; tabulating to compile data into tables; and data entry into a computer database for frequency distribution analysis. The data, measured on an ordinal scale, were converted to an interval scale using the Method of Successive Interval (MSI) for statistical analysis, implemented through Microsoft Excel (Sarwono & Budiono, 2012).

## **Instrument Testing**

The research employed multiple linear regression analysis using SPSS software to examine the relationship between independent and dependent variables, which was aligned with the study's objectives. Validity testing was conducted by comparing the calculated r-value against the r-table at a significance level of 0.01, with items deemed valid if the calculated r exceeded the r-table (Ghozali, 2005, 2009). Reliability testing used Cronbach's alpha, with a threshold of >0.60 indicating reliability (Ghozali, 2005).

## Method of Successive Interval (MSI)

The MSI procedure converted ordinal data to interval data to meet the requirements of parametric statistical analysis (Sarwono & Budiono, 2012). Steps included calculating response frequencies, determining proportions, deriving cumulative proportions, finding z-scores from normal distribution tables, calculating density values, and determining scale values using prescribed formulas. The data were then scaled by adjusting the smallest scale value to 1, ensuring uniformity for subsequent analysis.

#### Data Analysis Design

Data analysis encompassed descriptive and verification approaches. Descriptive analysis involved categorizing responses based on variables, tabulating data, and calculating frequency distributions to describe each variable. Verification analysis tested hypotheses to determine causal relationships using multiple linear regression (Riduwan & Kuncoro, 2017; Ghozali, 2021). Data were transformed from ordinal to interval scales using MSI, ensuring the validity of parametric tests.

## **Hypothesis Testing**

Hypotheses were evaluated using t-tests and F-tests. The t-test assessed the individual significance of independent variables on the dependent variable, with significance set at 0.05 (Weenas, 2013). The F-test examined the combined influence of independent variables, with significance determined by a probability value of  $\leq 0.05$  (Sugiyono, 2015). The coefficient of determination (R<sup>2</sup>) was analyzed to measure the model's explanatory power, with classifications based on Ghozali's (2021) guidelines.

#### **RESULTS AND DISCUSSION**

#### Results

#### **General Overview of Respondents**

This study involved respondents from all outpatient patients of the Bontang Islamic Hospital. The total population was 6,200, and a sample of 376 respondents was obtained using the Slovin formula. Three hundred seventy-six questionnaires were distributed and returned, indicating a complete response rate. The questionnaire distribution was coordinated with the Outpatient Service Department of the Bontang Islamic Hospital. The characteristics of the respondents were categorized by gender, age, education level, and occupation, as summarized below. Based on gender, 33.5% of the respondents were male, and 66.5% were female, indicating a predominance of female patients in the outpatient department. Most respondents were aged 45 years and older (27.4%), followed by those aged 25-30 years (23.7%). Other age groups had lower percentages: 30-35 years (13.8%), less than 25 years (12%), and 35-40 years (12%). The smallest group was those aged 40-45 (11.2%).

#### **Descriptive and Verificative Analysis**

In this section, a descriptive analysis was performed based on the responses from 376 respondents regarding the service quality at Bontang Islamic Hospital. The responses were categorized using a scale derived from the interval class formula, calculated to be 0.8. The categories used to assess the service quality included: Very Poor (1.00-1.80), Poor (1.81-2.60), Fair (2.61-3.40), Good (3.41-4.20), and Very Good (4.21-5.00). The results for each indicator in the service quality variable are as follows. Most respondents agreed or agreed that the doctor is skilled in diagnosing diseases and treatments, with 68.35% agreeing and 28.19% strongly agreeing, yielding an average score of 4.22, categorized as "Very Good." Similarly, the health services at Bontang Islamic Hospital were rated highly for their speed and accuracy in patient examination procedures, with 71.81% agreeing and 24.73% strongly agreeing, giving an average score of 4.20, categorized as "Good." The staff's responsiveness in providing patient services was rated very good by 68.35% of respondents, with 28.19% strongly agreeing, resulting in an average score of 4.24. 68.88% of respondents rated the administrative services positively, with 26.33% strongly agreeing, yielding an average score of 4.21, categorized as "Good." The outpatient clinic's facilities and equipment were rated as good, with 71.28% agreeing and 21.01% strongly agreeing, resulting in an average score of 4.13. The staff's confidence in providing services was highly rated, with 68.35% agreeing and 29.26% strongly agreeing, earning an average score of 4.26. Similarly, the staff's readiness to assist with difficulties received positive feedback, with 66.76% agreeing and 31.91% strongly agreeing,

yielding an average score of 4.30. The staff's meticulousness in service provision and the cleanliness and tidiness of the service area were also highly rated, with average scores of 4.22 and 4.27, respectively, categorized as "Very Good." These results indicate high satisfaction with the service quality at Bontang Islamic Hospital, particularly regarding staff performance and the overall hospital environment.

Based on the analysis of frequency statistics and descriptive statistics from the responses of 376 respondents, five indicators were evaluated for the cost variable. Most respondents agreed that the examination fees at Rumah Sakit Islam Bontang were affordable, with 71.54% agreeing and 14.36% strongly agreeing. The average score for this item was  $\mu = 3.99$ , which falls under the "good" category. Similarly, the majority also agreed that the medical action fees (72.61% agreed and 13.03% strongly agreed) and the medication costs (74.47% agreed and 10.37% strongly agreed) at the hospital were affordable, with average scores of  $\mu = 3.98$  and  $\mu = 3.94$ , respectively. For administrative fees, 70.74% agreed, and 14.36% strongly agreed, with an average score of  $\mu = 3.98$ . Lastly, most respondents also agreed that there were options for tariff plans in the services, with 68.62% agreeing and 11.17% strongly agreeing, and an average score of  $\mu = 3.88$ .

As for the delivery variable, four indicators were assessed. The registration process was rated positively, with 70.48% of respondents agreeing and 21.54% strongly agreeing. The average score for this item was  $\mu = 4.13$ , categorized as "good." The majority also agreed that the examination process was fast and punctual (72.34% agreed, 16.49% strongly agreed, and  $\mu = 4.05$ ). The pharmacy services were rated highly, with 79.26% agreeing and 16.76% strongly agreeing that there was no long wait for medication, achieving an average score of  $\mu = 3.66$ . Information delivery was also rated favorably, with 79.26% agreeing and 16.76% strongly agreeing, resulting in an average score of  $\mu = 4.12$ .

Finally, five indicators were examined for the patient satisfaction variable. Most respondents were satisfied with the information provided by the staff at Rumah Sakit Islam Bontang (73.67% agreed and 23.67% strongly agreed), with a mean score of  $\mu = 4.20$ . The satisfaction with services and willingness to return to the hospital was also high, with 74.47% agreeing and 21.81% strongly agreeing ( $\mu = 4.18$ ). Respondents were likely to recommend the hospital's services to others, with 73.67% agreeing and 21.54% strongly agreeing ( $\mu = 4.15$ ). Regarding using services outside the hospital, 69.68% agreed, and 14.36% strongly agreed, with a mean score of  $\mu = 3.89$ . Finally, respondents were willing to continue using Rumah Sakit Islam Bontang's services instead of turning to other hospitals (62.23% agreed and 14.89% strongly agreed,  $\mu = 3.87$ ).

Data Analysis

The data quality tests, including validity and reliability tests, were conducted using SPSS version 27. The validity test for the service quality variable, consisting of 9 indicators (KL1-KL9), showed significant values of 0.000 (<0.05) with Pearson correlation coefficients ranging from 0.631 to 0.857, indicating validity for all items (Source: Primary data processed, 2024). Similarly, the significance value of the cost variable (BIAYA1-BIAYA5) was 0.000, with correlation coefficients between 0.780 and 0.923, demonstrating validity (Source: Primary data processed, 2024). The delivery variable (PHT1-PHT4) also showed valid items with correlation coefficients between 0.756 and 0.824, with a significance of 0.000 (Source: Primary data processed, 2024). All items were valid for the patient satisfaction variable (KP1-KP5), with correlation coefficients between 0.532 and 0.805 and a significance value of 0.000 (Source: Primary data processed, 2024). The reliability test revealed Cronbach's Alpha values of 0.910 for service quality, 0.931 for cost, 0.778 for delivery, and 0.741 for patient satisfaction, all indicating that the items within each variable were reliable (Source: Primary data processed, 2024).

#### **Classical Assumption Test**

The classical assumption tests in regression analysis aim to evaluate whether the regression model meets the criteria of Best Linear Unbiased Estimator (BLUE), indicating that the model provides linear, unbiased estimates with minimal variation. These assumptions include residual normality, homoscedasticity (constant residual variance), no multicollinearity, and no autocorrelation in the residuals. Through classical assumption testing, this study evaluates how reliable the regression model is in providing accurate and efficient estimates. The residual normality test ensures the residuals have a normal distribution, while the heteroscedasticity test assesses whether the variability of residuals remains constant across the range of independent values. The multicollinearity test checks the dependency between independent variables, and the autocorrelation test identifies if there is a correlation between residuals at different periods. Based on the Kolmogorov-Smirnov analysis, the normality test results indicate that the model's residuals do not follow a normal distribution (p-value = 0.00 <0.05). However, the residuals spread along a linear line and follow a normal distribution according to the histogram, indicating that the regression model is not yet BLUE. Given the large sample size (376 data points), normality can still be assumed. The multicollinearity test, with Variance Inflation Factor (VIF) values of 1.512, 1.710, and 2.125 for service quality, cost, and delivery, respectively, and tolerance values of 0.662, 0.585 and 0.473, confirms that there is no significant multicollinearity. The heteroscedasticity test shows that the independent variables (service quality, cost, and delivery) do not significantly correlate with the residual values (p-values = 0.100, 0.060, 0.753), satisfying the homoscedasticity assumption. Using the Durbin-Watson statistic of 2.110, the autocorrelation test falls within the range of 1.799 (dU) and 2.201 (4-dU), indicating no autocorrelation issues. As a result, the classical assumption tests confirm that the multiple linear regression model is reliable for answering the research hypothesis. The multiple regression analysis, predicting the effect of service quality, cost, and delivery on patient satisfaction, yields the equation: Y = 0.210X1 + 0.112X2 + 0.464X3 +1.558. This shows that the constant (1.558) represents the base patient satisfaction when all independent variables are zero, and each variable (service quality, cost, and delivery) has a significant positive effect on patient satisfaction, with coefficients of 0.210, 0.112, and 0.464, respectively (Source: Primary data processed, 2024).

#### **Hypothesis Test**

The t-test was conducted to assess the individual impact of service quality, cost, and delivery on patient satisfaction in outpatient services at Bontang Islamic Hospital. The results showed that service quality significantly affected patient satisfaction with a  $\beta = 0.384$ , the cost had a significant impact with  $\beta = 0.136$ , and delivery (Penghantaran) had a significant effect with  $\beta = 0.392$ , all with p-values less than 0.05, indicating that improvements in these factors would increase patient satisfaction by 38.4%, 13.6%, and 39.2%, respectively. Additionally, the F-test revealed that all independent variables collectively had a significant impact on patient satisfaction, as the F-statistic (190.013) was significantly greater than the F-table, with a p-value of 0.000. This indicates that the model is fit, and the independent variables influence patient satisfaction. The coefficient of determination (R<sup>2</sup>) showed that 60.2% of the variance in patient satisfaction was explained by service quality, cost, and delivery, with the remaining 39.8% influenced by other variables not included in the study (Ghozali, 2018).

#### Discussion

## The Influence of Lean Healthcare Including Service Quality, Cost, and Delivery on Patient Satisfaction at Bontang Islamic Hospital Outpatient Department

The study examined the impact of service quality, cost, and delivery on patient satisfaction at Bontang Islamic Hospital Outpatient Department, finding that all variables

significantly contributed to positive patient experiences. Service quality was measured using indicators such as KL1 through KL9, with results showing good to very good ratings across the board. The highest rating, 4.30, was attributed to KL7, indicating that patients appreciated the hospital staff's readiness to assist with difficulties. In contrast, KL5, with a rating of 4.13, reflected good satisfaction with the completeness of outpatient facilities. Cost was assessed through BIAYA1 to BIAYA5, and patients expressed satisfaction with affordable medical fees, with BIAYA1 receiving the highest rating of 3.99. The lowest rating, 3.94, was observed for BIAYA3, indicating that medication prices were also considered reasonable. Delivery was evaluated through PHT1 to PHT4, with PHT1 achieving the highest rating of 3.66, pointed to slightly longer medication wait times but still in the good range. Overall, the study suggests that service quality, cost, and delivery are essential factors for patient satisfaction, aligning with existing literature by Tjiptono (2012), Indrasari (2019), and Aulia et al. (2017), which emphasizes the importance of these elements in healthcare settings.

## The Partial Influence of Lean Healthcare Service Quality on Patient Satisfaction at Bontang Islamic Hospital Outpatient Department

Service quality was found to have a partial yet significant effect on patient satisfaction at Bontang Islamic Hospital Outpatient Department, with a coefficient of 0.210. According to Indrasari (2019), quality is a dynamic condition related to products, processes, and environments that meet or exceed customer expectations, a notion further supported by Tjiptono (2012). Wahyudiyono (2021) defines service quality as the customer's overall assessment of a service based on their needs and final perception. Hospitals play a crucial role in enhancing public health by offering services that meet patients' expectations while adhering to medical ethics. The study revealed that improvements in service quality lead to increased patient satisfaction, confirming that higher service quality results in greater patient satisfaction, as supported by Aulia et al. (2017). The findings also align with Ayuningrum et al. (2013), who highlight entrepreneurial management's importance in fostering service excellence and patient responsiveness. The study confirms that service quality improvements lead to a 0.210 increase in patient satisfaction, echoing the results of Afriadi (2016) and Setianingsih and Susanti (2021), who found a positive correlation between service quality and patient satisfaction in healthcare settings. Furthermore, Dewi (2016) supports the notion that improved service quality leads to higher patient satisfaction, which enhances overall healthcare delivery.

#### The Partial Influence of Lean Healthcare Including Cost on Patient Satisfaction at Bontang Islamic Hospital Outpatient Department

Cost plays a significant role in patient satisfaction, as it is the amount of money charged for a product or service that reflects the value a consumer receives (Kotler & Armstrong, 2013). According to Siregar et al. (2016), cost involves economic sacrifices to acquire goods or services that provide benefits now or in the future. In healthcare, affordability is a key consideration for patients when choosing healthcare services. This aligns with Isyanto et al. (2013), who emphasize that affordable medication prices are crucial for patient satisfaction. Chang and Chang (2012) also highlight the importance of affordable healthcare costs. The analysis in this study showed that, in a partial context, lean healthcare costs significantly influenced patient satisfaction at Bontang Islamic Hospital Outpatient Department, with a coefficient of 0.112. Affordable and reasonable costs increase patient satisfaction, including administration fees, medical and nursing procedures, medical supplies, and non-medical products. This result supports the findings of Herman et al. (2022), who affirmed that cost positively and significantly influences patient satisfaction. Similarly, Dahlia (2020) demonstrated a strong relationship between affordable pricing and the perceived quality of services, which directly impacts customer satisfaction. Handoyo (2019) also highlighted that cost is a significant factor affecting patient satisfaction, indicating that the more appropriate and reasonable the costs, the higher the satisfaction among patients receiving healthcare services.

## The Partial Influence of Lean Healthcare Including Delivery on Patient Satisfaction at Bontang Islamic Hospital Outpatient Department

In healthcare services, delivery is closely related to the speed and ease of service processes. A fast and efficient delivery process at hospitals significantly affects patient satisfaction. It is essential for all medical staff, not just healthcare providers, to serve patients quickly and efficiently, creating a positive atmosphere and improving the overall healthcare environment. The results from this study showed that, in a partial context, delivery had a significant effect on patient satisfaction, with a coefficient of 0.464. This suggests that improving the delivery of services, such as speed and ease of healthcare processes, enhances patient satisfaction. This aligns with the findings of Handoyo (2019), who indicated that delivery speed and service efficiency contribute positively to patient satisfaction. However, Handoyo also mentioned that the effect might not always be significant, suggesting that not all aspects of service delivery have the same level of influence. In this study, the delivery improvement directly impacted patient satisfaction, reflecting that faster and more efficient services can elevate patient experiences. This result contrasts with Handoyo's findings, where the influence of delivery on patient satisfaction was insignificant. This discrepancy highlights the importance of improving healthcare service processes to ensure timely and effective treatment.

# The Simultaneous Influence of Lean Healthcare Including Quality, Cost, and Delivery on Patient Satisfaction at Bontang Islamic Hospital Outpatient Department

Patient satisfaction is determined by comparing the services received with expectations, as defined by Indrasari (2019). Satisfied patients are more likely to return for services and recommend the hospital to others. Lean healthcare, a systematic approach to improving quality and efficiency, is widely applied in various industries, including healthcare, to address inefficiencies. Although lean practices are common in manufacturing, their application in healthcare is still limited. The study indicated that lean healthcare factors, including service quality, cost, and delivery, significantly influenced patient satisfaction at Bontang Islamic Hospital Outpatient Department. This aligns with Amanda et al. (2024), who found that lean hospital principles in emergency units improve service quality, reduce patient waiting times, and enhance satisfaction. Implementing lean management helps eliminate unnecessary waste and speed up patient processes. Ratnaningrum et al. (2023) highlighted that lean management impacts patient satisfaction through improved nursing services and reduced waiting times. Moreover, Hung et al. (2018) and Sirvent et al. (2016) further confirmed that lean healthcare principles positively affect patient satisfaction and healthcare worker efficiency, underscoring the importance of applying lean strategies in healthcare to improve overall service quality and patient care.

#### CONCLUSION

The descriptive analysis results from this study demonstrate that the overall service quality at Bontang Islamic Hospital is rated highly. The service quality indicators, such as doctors' reliability, speed, accuracy of procedures, and staff attentiveness, received excellent average scores, with the highest rating on staff readiness to assist patients (4.30). The cost variables, including examination fees, medical procedures, and affordable medication prices, were also positively evaluated, with the lowest score being the medication price (3.94). Delivery-related aspects, including registration, examination, and medication services, also showed good results, with the highest score on ease of registration (4.13) and the lowest on medication services (3.66). Patient satisfaction was similarly good, with the highest ratings for the information

provided by staff (4.20) and the lowest for the willingness to avoid switching to other hospitals (3.87). Overall, Bontang Islamic Hospital has performed excellently across all evaluated aspects, with most respondents expressing satisfaction with the hospital's services. Additionally, all service quality indicators, cost variables, and delivery-related aspects were rated well, confirming that the hospital meets the expectations of its patients in terms of both service and affordability.

The verification analysis confirms that Lean Healthcare, which encompasses service quality, cost, and delivery, significantly influences patient satisfaction at Bontang Islamic Hospital's Outpatient Department. It is evident that each factor—service quality, cost, and delivery—individually contributes to patient satisfaction. The study showed that service quality, cost, and delivery each partially affect satisfaction, with delivery having the strongest impact. Moreover, when these elements are combined, they collectively enhance patient satisfaction, underscoring the effectiveness of Lean Healthcare practices. This approach focuses on improving efficiency and reducing waste in healthcare services. It plays a crucial role in elevating patient satisfaction by improving the quality of service, affordability, and delivery efficiency.

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